

California High-Speed Rail Authority



RFP No.: HSR 14-32

Request for Proposals for Design-Build Services for Construction Package 4

Reference Material, Part B.2 PE4P Non-Standard-Complex Structures Plans

Note: Southern limit of CP4 ends just north of Poplar Ave, at approximately station WS1 5880+00, even though this document shows the limit just north of 7th Standard Road. Work south of the contract limit of WS1 5880+00 should not be considered as part of the contract

CALIFORNIA HIGH-SPEED TRAIN

Engineering Drawings

Preliminary Engineering for Procurement Record Set Submission **Fresno to Bakersfield** Sierra Subdivision Construction Package 4 Non-Standard and Complex Structure Plans

October 2014



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HSR STRUCTURES

DRAWING No	DRAWING DESCRIPTION	SHEET No
GE-A0033	HST STRUCTURES - INDEX OF SHEET (SHEET 1 OF 1)	1 OF 15
ST-J1100	THROUGH WASCO SHAFTER SUBSECTION - ALIGNMENT WS1 - WASCO VIADUCT - PLAN AND ELEVATION	2 OF 15
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ST-J1111	THROUGH WASCO SHAFTER SUBSECTION - ALIGNMENT WS1 - SHAFTER VIADUCT - PLAN AND ELEVATION	6 OF 15
ST-J1112	THROUGH WASCO SHAFTER SUBSECTION - ALIGNMENT WS1 - SHAFTER VIADUCT - PLAN AND ELEVATION	7 OF 15
ST-J1113	THROUGH WASCO SHAFTER SUBSECTION - ALIGNMENT WS1 - SHAFTER VIADUCT - PLAN AND ELEVATION	8 OF 15
ST-J1114	THROUGH WASCO SHAFTER SUBSECTION - ALIGNMENT WS1 - SHAFTER VIADUCT - TYPICAL SECTIONS	9 OF 15
ST-J5110	PACKAGE 4 - ELEVATED SLAB STRUCTURE - SECTIONS AND LAYOUT - GENERAL ARRANGEMENT	10 OF 15
ST-J5111	PACKAGE 4 - ELEVATED SLAB STRUCTURE - TYPICAL SECTIONS AND LAYOUT - GENERAL ARRANGEMENT	11 OF 15
ST-J5112	PACKAGE 4 - ELEVATED SLAB STRUCTURE - TYPICAL SECTIONS AND LAYOUT - GENERAL ARRANGEMENT	12 OF 15
ST-J5113	BOX CULVERT - TYPICAL DETAILS - SHEET 1	13 OF 15
ST-J5114	BOX CULVERT - TYPICAL DETAILS - SHEET 2	14 OF 15
ST-J5115	RETAINED EMBANKMENT - TYPICAL RETAINING WALL	15 OF 15

NOTE:
INFORMATION SHOWN IN THIS SET, IS SUPPLEMENTAL TO THE 15% STRUCTURAL PLANS. IN THE CASE OF DISCREPANCIES, THE DESIGN SHOWN IN THIS SET SHALL BE USED.

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY P. TONKIN
DRAWN BY P. TONKIN
CHECKED BY K. SEYMOUR
IN CHARGE S. BURGESS
DATE 10/17/14

PROPOSED
PRELIMINARY
DESIGN

NOT FOR
CONSTRUCTION

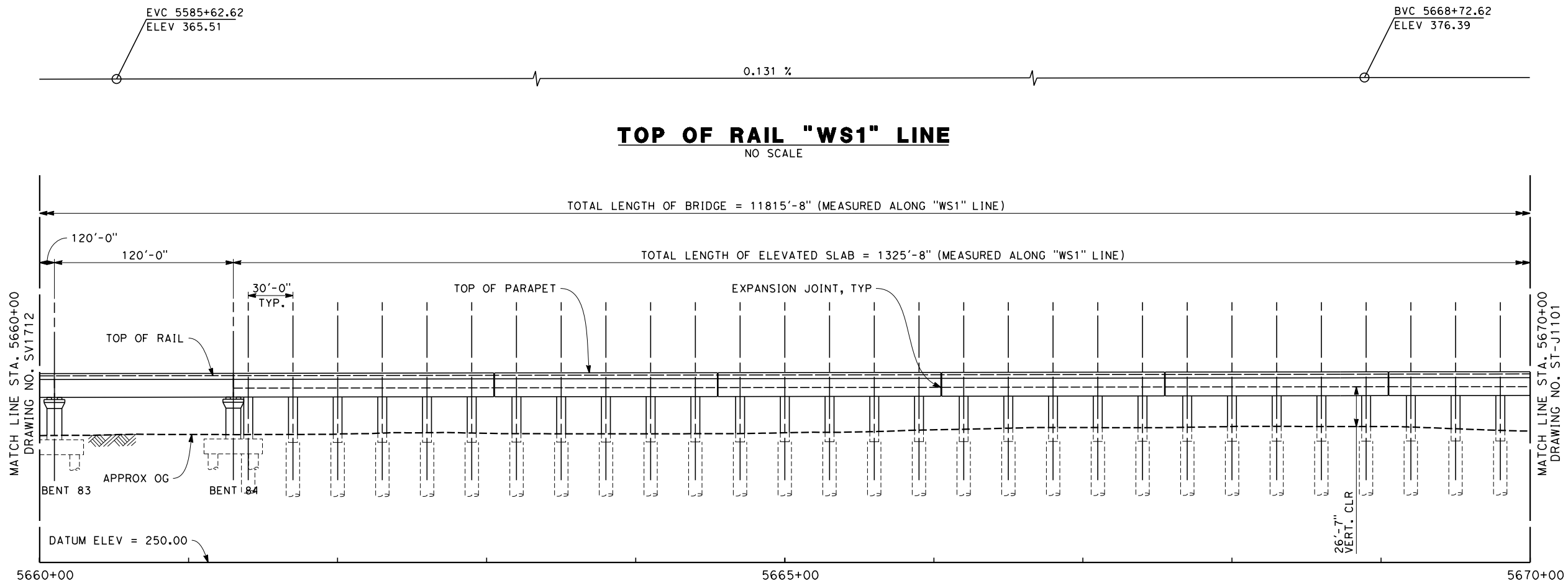


CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD

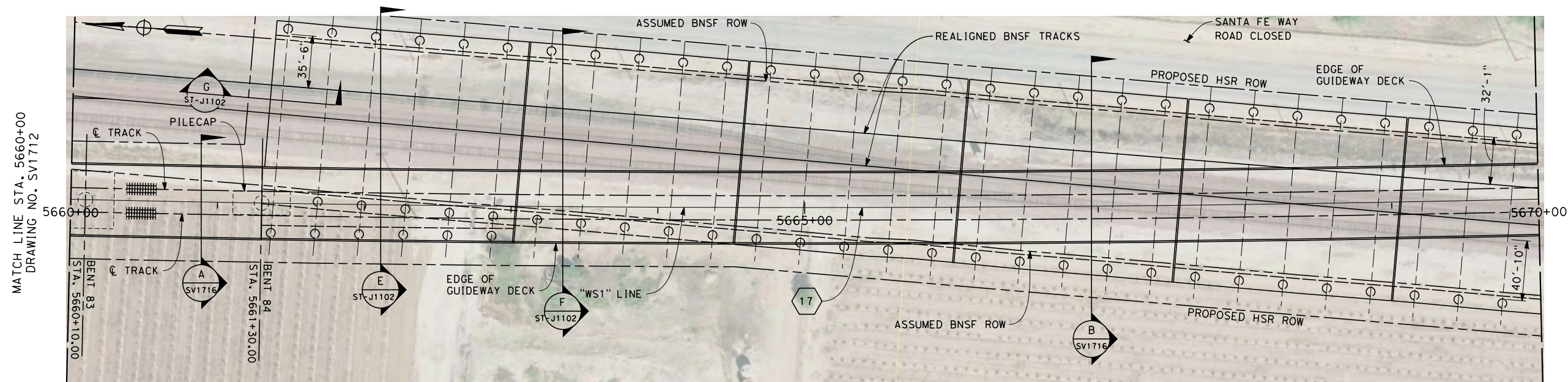
HSR STRUCTURES
INDEX OF SHEETS
SHEET 1 OF 1

CONTRACT NO. HSR 06-0003
DRAWING NO. GE-A0033
SCALE NO SCALE
SHEET NO. 1 OF 15

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ELEVATION
SCALE 1" = 40'



PLAN
SCALE 1" = 40'

NOTES

1. NOT ALL PILES SHOWN
2. PILE LENGTH TO BE DETERMINED
3. SUPERSTRUCTURE CONSTRUCTION, UON
SIMPLE SPANS - MSS OR FLPM
CONTINUOUS SPANS - BCC - PRECAST IN-SITU
STEEL TRUSS - INSITU, SLID OR LAUNCHED
ELEVATED SLABS - PC BEAM AND INSITU SLAB
4. UTILITY LOCATIONS TO BE DETERMINED
5. ACCESS STAIRWAYS ARE PROVIDED AT SYSTEMS SITES (APPROX. 2.5 MILE INTERVALS). LADDER ACCESS TO VIADUCTS IS PROVIDED AT 2500 FT INTERVALS WITH ACCESS ROAD AND TURNING CIRCLE WHERE NECESSARY.

LEGEND:

- ① STRUCTURE APPROACH SLAB
- ② RETAINING WALL
- * ESTIMATED 100-YEAR FLOOD ELEVATION, SEE "FRESNO TO BAKERSFIELD CORRIDOR HYDROLOGY, HYDRAULICS AND DRAINAGE 15% DRAFT REPORT".

CURVE DATA

17
R = 22000
Δ = 40°02'15"
T = 8016
L = 15373



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**

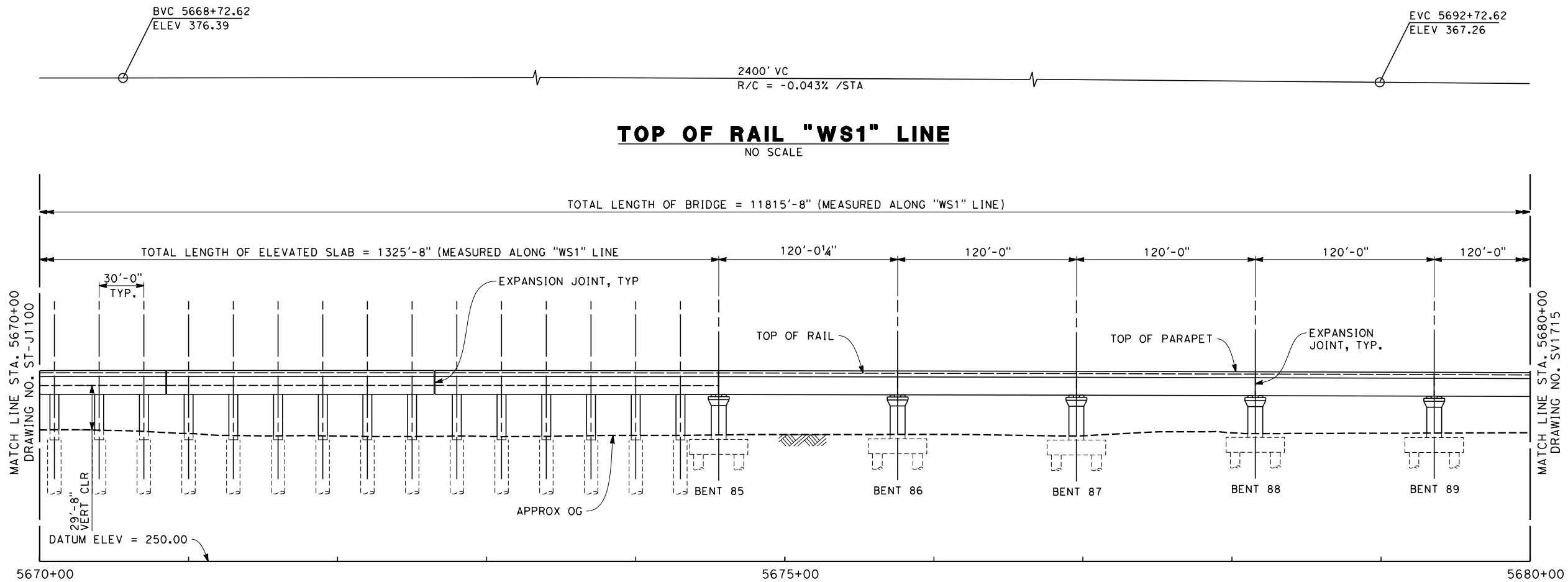


**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**
THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
WASCO VIADUCT
PLAN AND ELEVATION

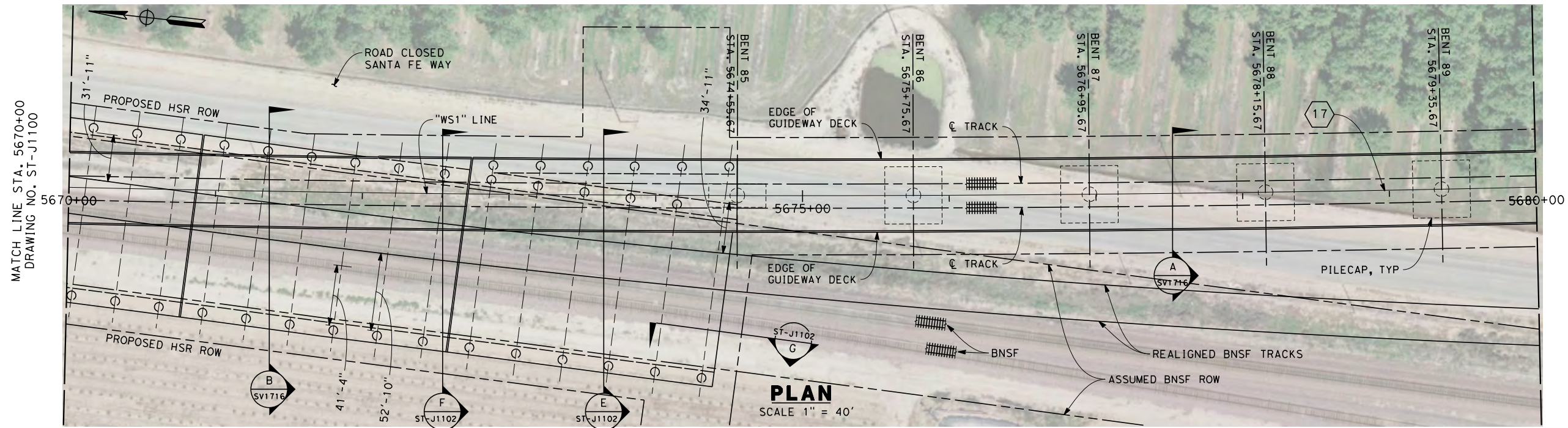
CONTRACT NO. HSR 06-0003
DRAWING NO. ST-J1100
SCALE AS SHOWN
SHEET NO. 2 OF 15

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ELEVATION
SCALE 1" = 40'



NOTES

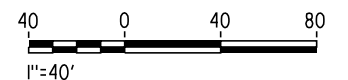
1. NOT ALL PILES SHOWN
2. PILE LENGTH TO BE DETERMINED
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SIMPLE SPANS - MSS OR FLPM
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CURVE DATA

R = 22000
Δ = 40°02'15"
T = 8016
L = 15373



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DESIGNED BY
M. FISHER
DRAWN BY
F. PALERMO
CHECKED BY
A. ARMSTRONG
IN CHARGE
R. COFFIN
DATE
10/17/14

**PROPOSED
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DESIGN**

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**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**
THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
WASCO VIADUCT
PLAN AND ELEVATION

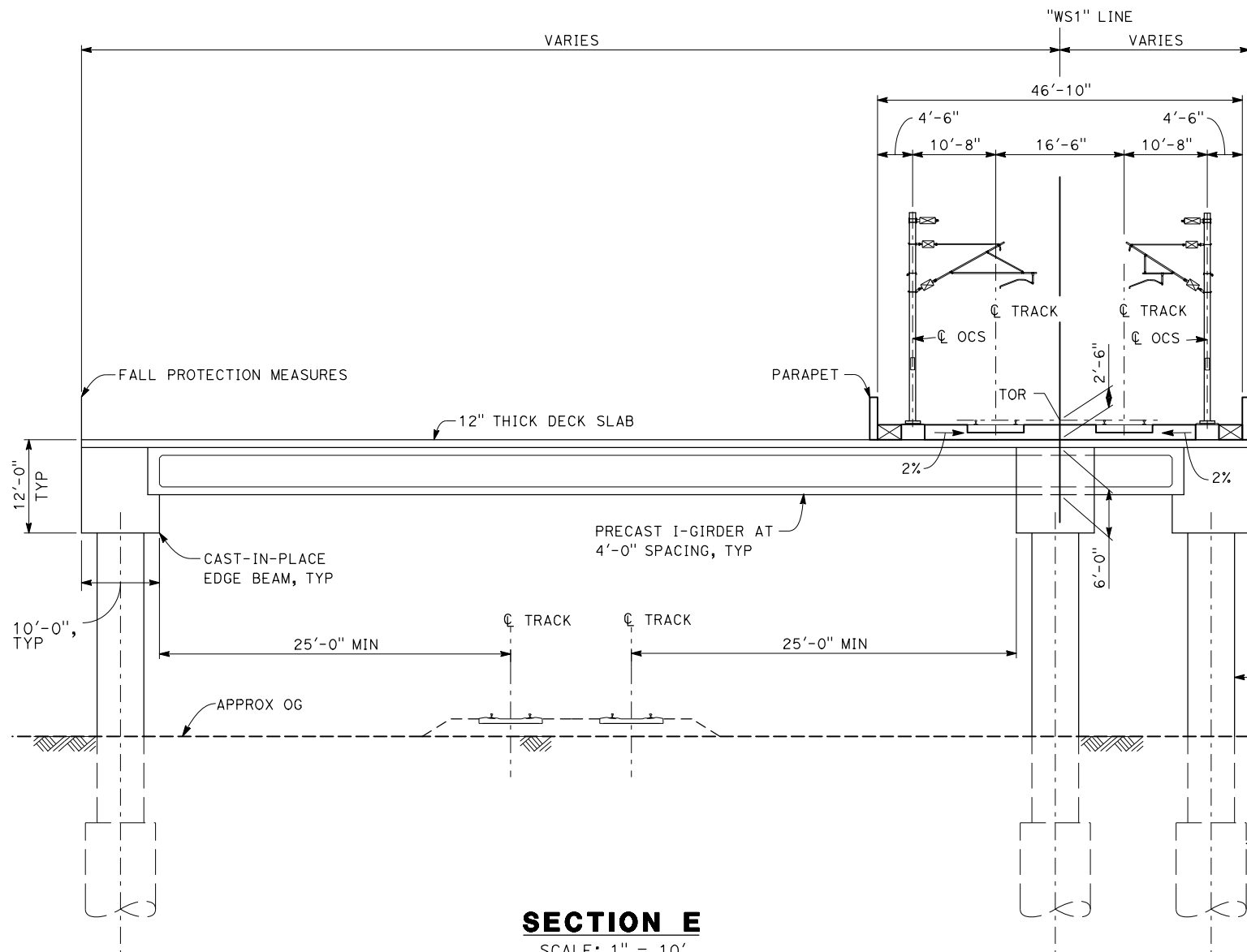
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DRAWING NO. ST-J1101
SCALE AS SHOWN
SHEET NO. 3 OF 15

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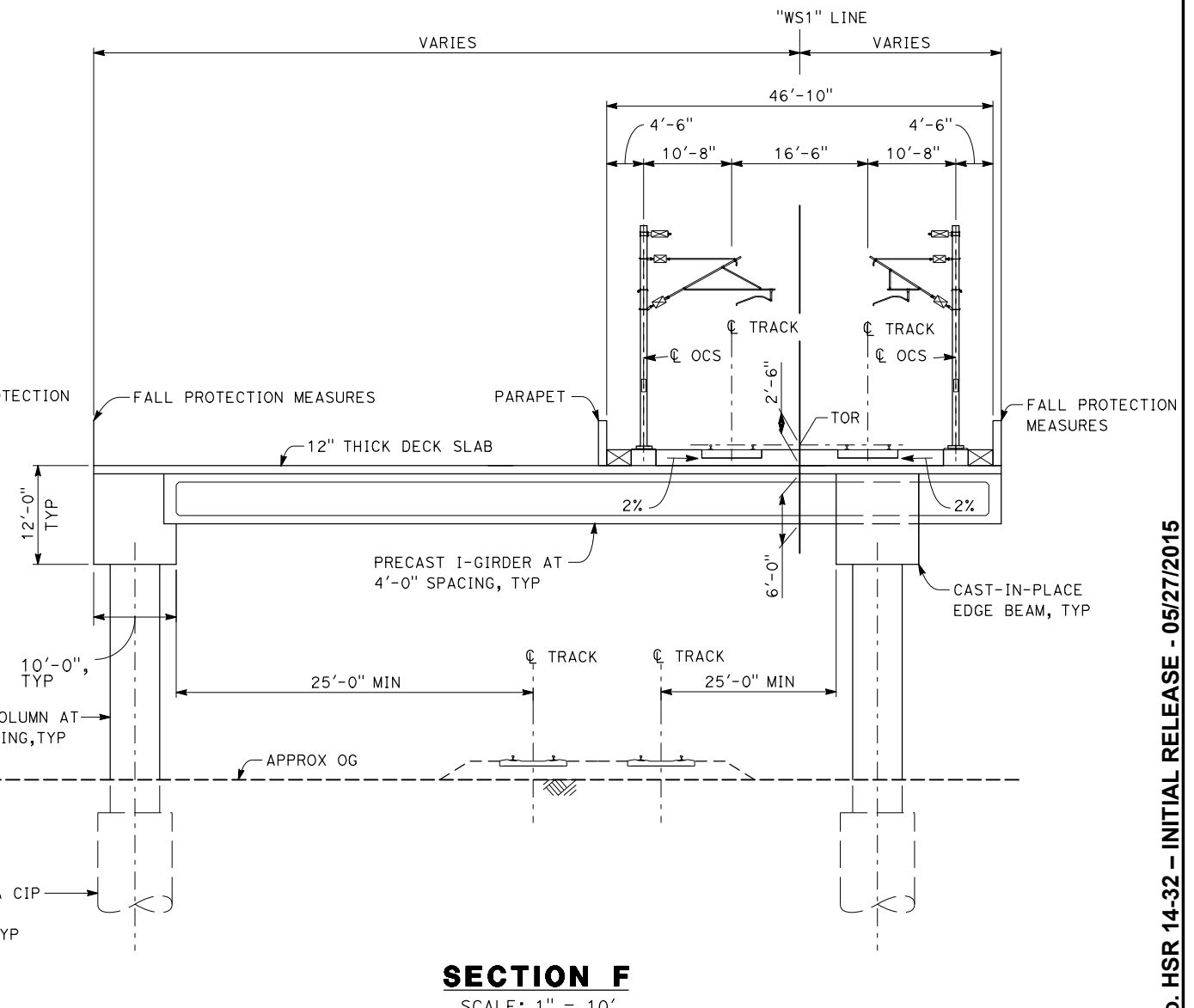
paul.tonkin



SECTION E

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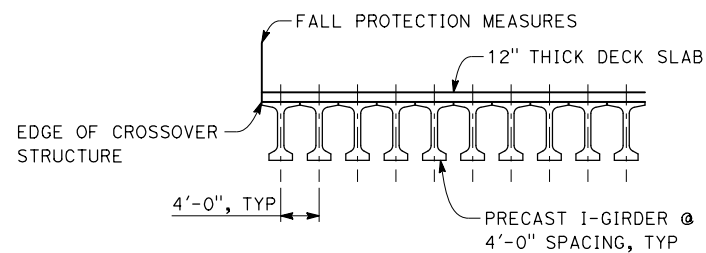
STA 5661+30 THROUGH 5663+10
STA 5672+70 THROUGH 5674+55



SECTION F

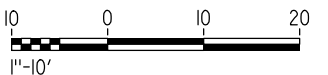
SCALE: 1" = 10'

STA 5663+10 THROUGH 5664+60
STA 5672+10 THROUGH 5672+70



SECTION G

SCALE: 1" = 10'



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Y. REN
DRAWN BY F. PALERMO
CHECKED BY Q. LIU
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**



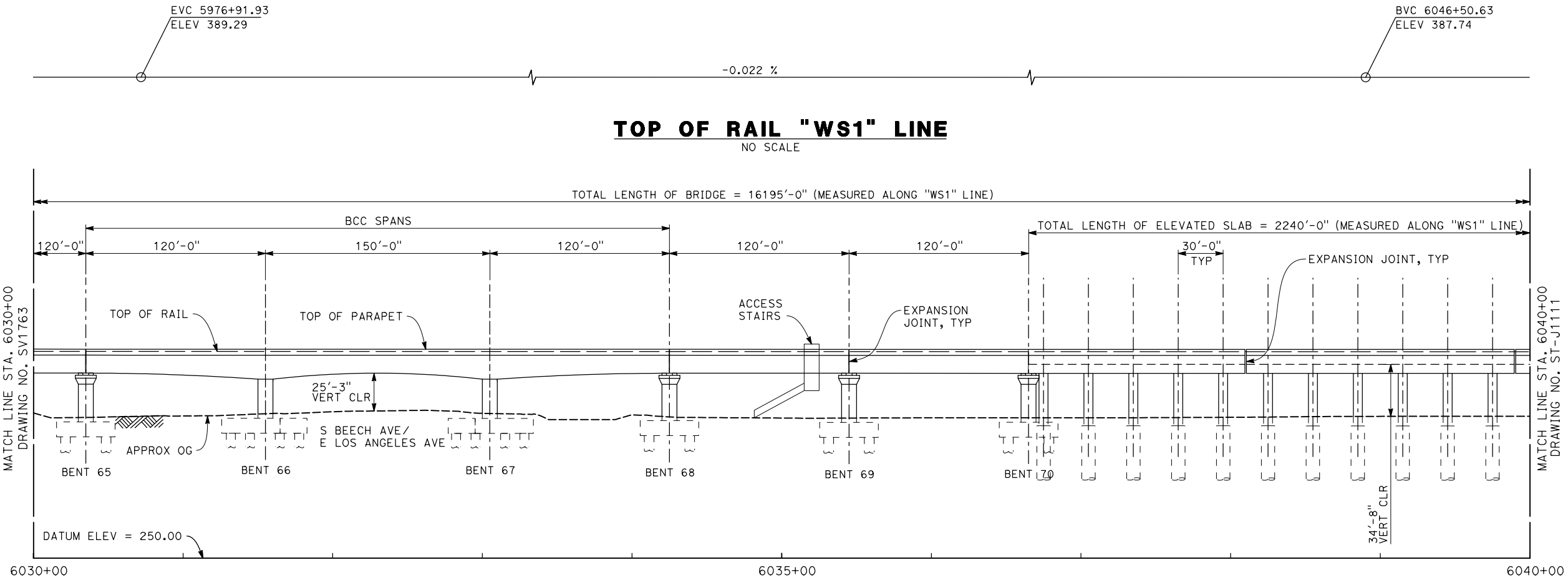
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
WASCO VIADUCT
TYPICAL SECTIONS

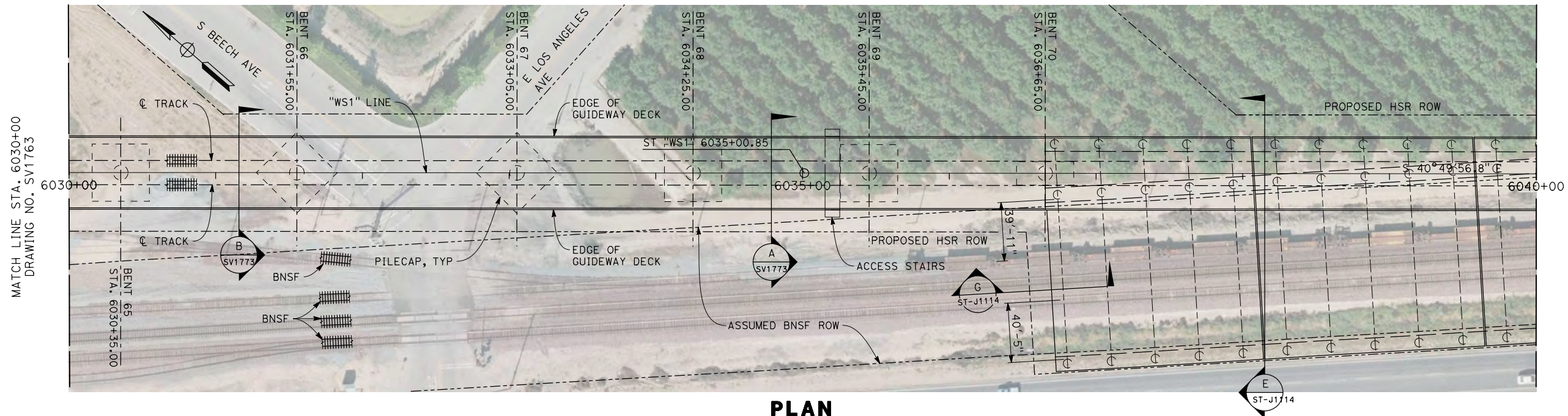
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SHEET NO. 4 OF 15

RFI No. HSR 14-32 - INITIAL RELEASE - 05/27/2015

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paul.tonkin



ELEVATION
SCALE 1" = 40'



PLAN
SCALE 1" = 40'

- NOTES**
1. NOT ALL PILES SHOWN
 2. PILE LENGTH TO BE DETERMINED
 3. SUPERSTRUCTURE CONSTRUCTION, UON
SIMPLE SPANS - MSS OR FLPM
CONTINUOUS SPANS - BCC - PRECAST IN-SITU
STEEL TRUSS - INSITU, SLID OR LAUNCHED
ELEVATED SLABS - PC BEAM AND INSITU SLAB
 4. UTILITY LOCATIONS TO BE DETERMINED
 5. ACCESS STAIRWAYS ARE PROVIDED AT SYSTEMS SITES (APPROX. 2.5 MILE INTERVALS). LADDER ACCESS TO VIADUCTS IS PROVIDED AT 2500 FT INTERVALS WITH ACCESS ROAD AND TURNING CIRCLE WHERE NECESSARY.

- LEGEND:**
- ① STRUCTURE APPROACH SLAB
 - ② RETAINING WALL
 - * ESTIMATED 100-YEAR FLOOD ELEVATION, SEE "FRESNO TO BAKERSFIELD CORRIDOR HYDROLOGY, HYDRAULICS AND DRAINAGE 15% DRAFT REPORT".



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DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
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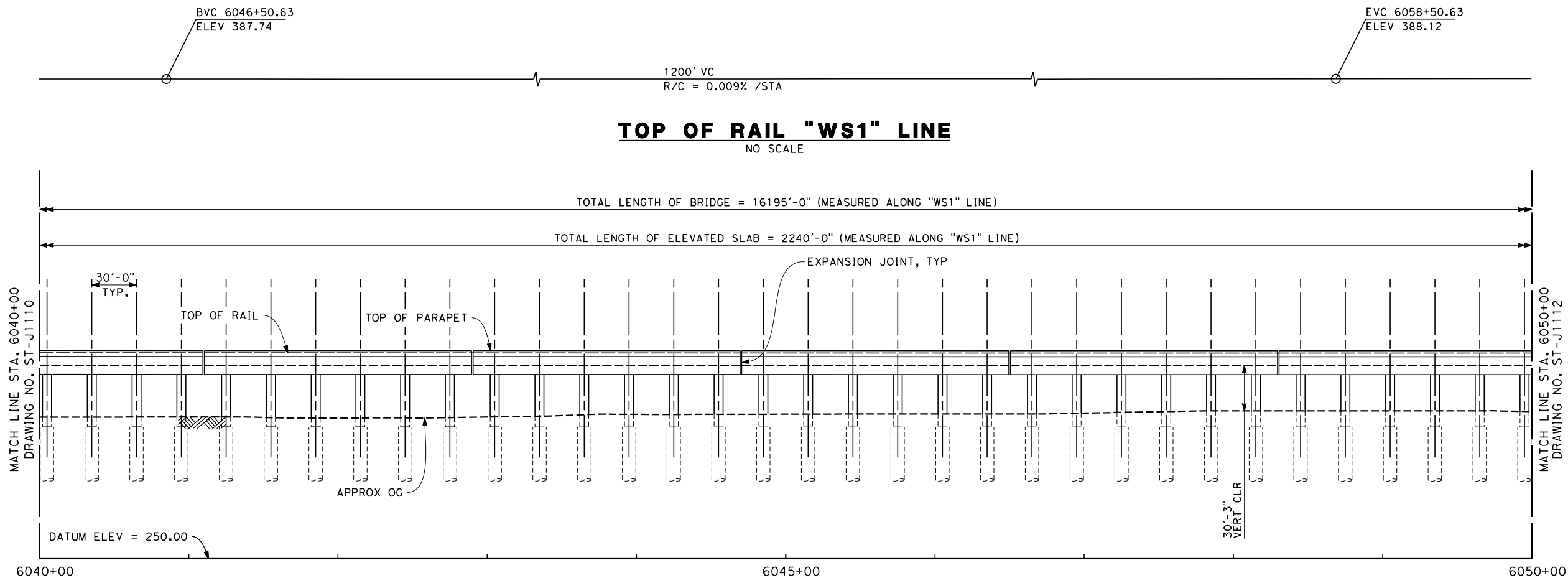
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FRESNO TO BAKERSFIELD**

THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
SHAFTER VIADUCT
PLAN AND ELEVATION

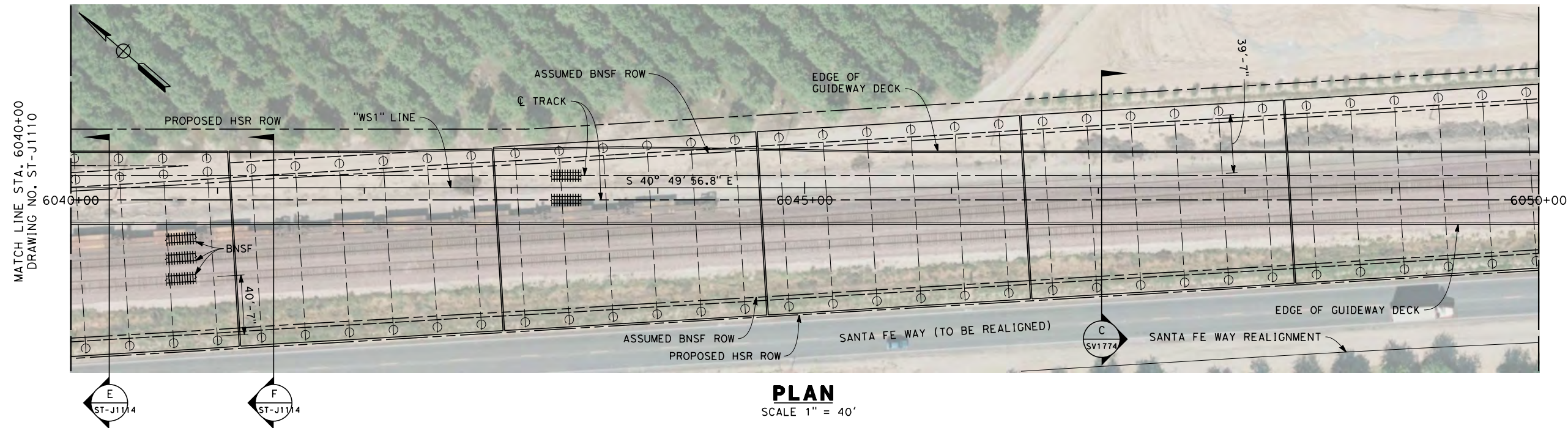
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SCALE AS SHOWN
SHEET NO. 5 OF 15

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ELEVATION
SCALE 1" = 40'



PLAN
SCALE 1" = 40'

NOTES

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DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

PROPOSED PRELIMINARY DESIGN
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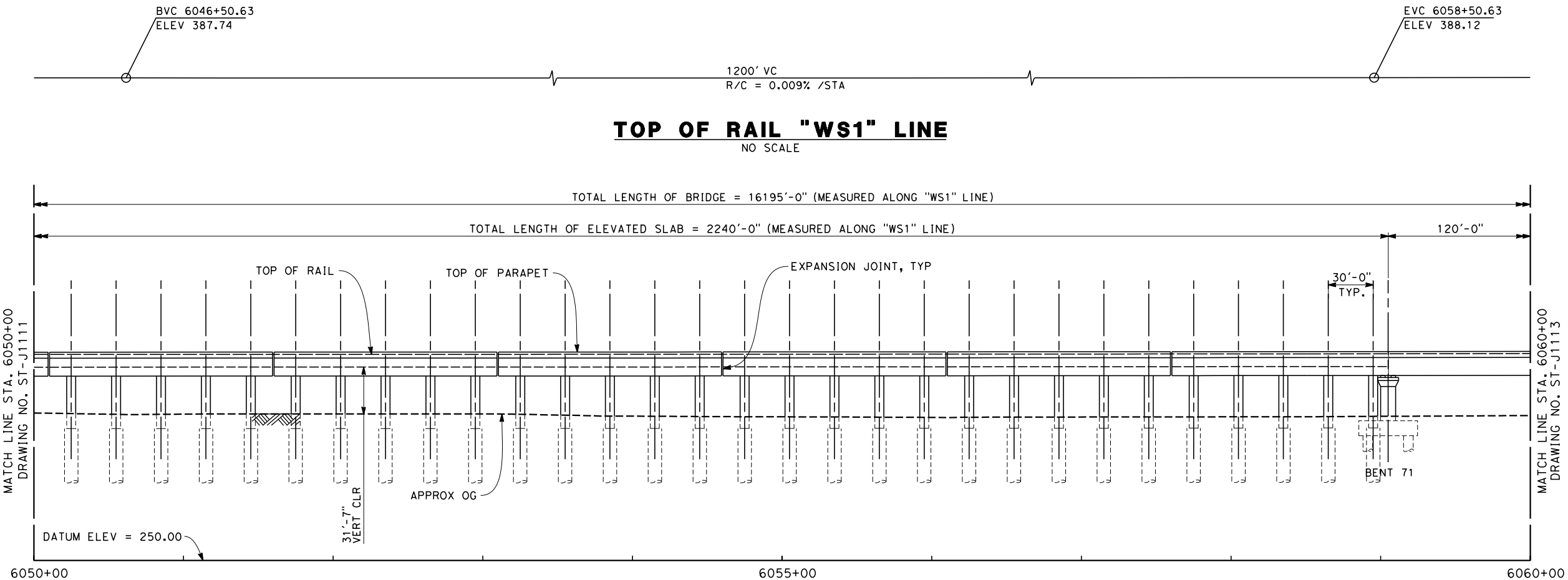


CALIFORNIA HIGH-SPEED TRAIN PROJECT FRESNO TO BAKERSFIELD
THROUGH WASCO-SHAFTER SUBSECTION ALIGNMENT WS1 SHAFTER VIADUCT PLAN AND ELEVATION

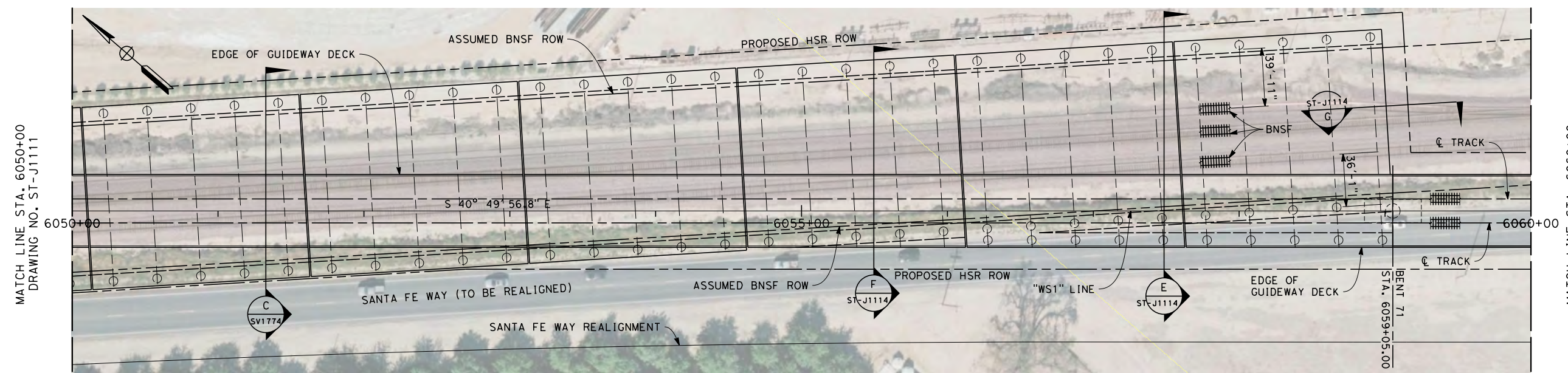
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DRAWING NO. ST-J1111
SCALE AS SHOWN
SHEET NO. 6 OF 15

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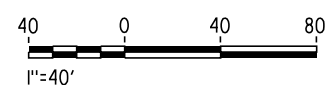
ELEVATION
SCALE 1" = 40'



PLAN
SCALE 1" = 40'

- NOTES**
1. NOT ALL PILES SHOWN
 2. PILE LENGTH TO BE DETERMINED
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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
M. FISHER
DRAWN BY
F. PALERMO
CHECKED BY
A. ARMSTRONG
IN CHARGE
R. COFFIN
DATE
10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
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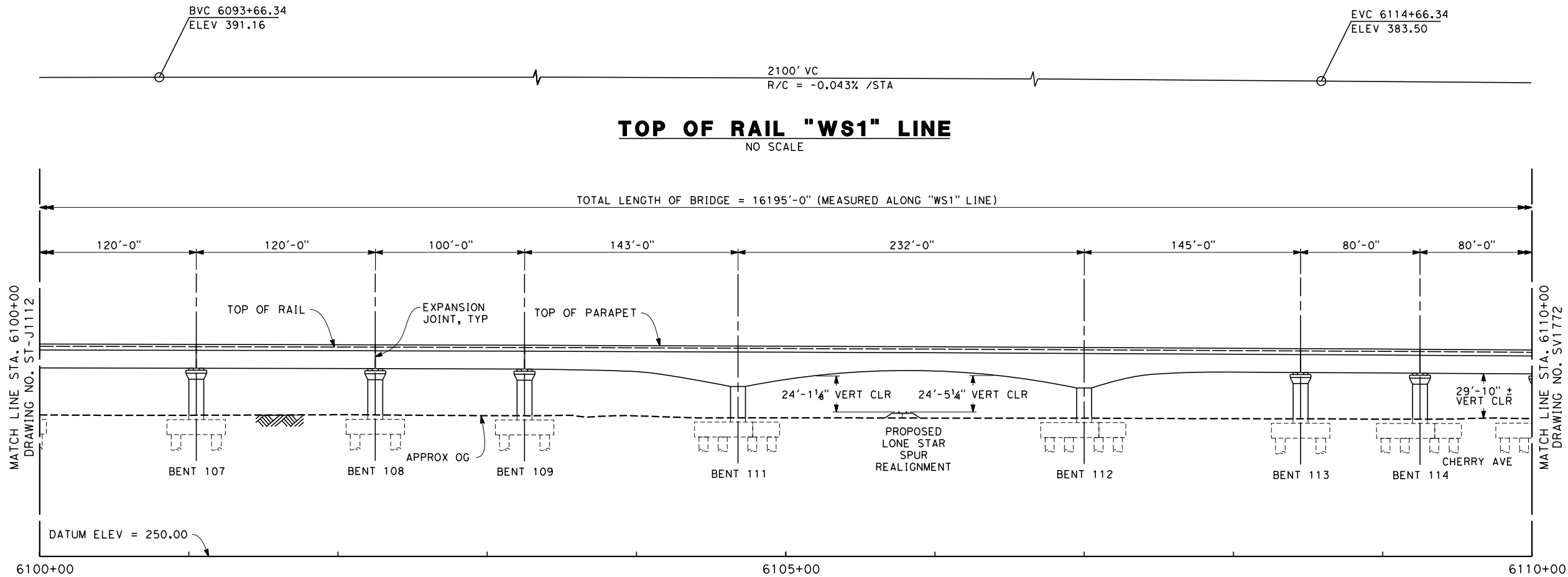
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FRESNO TO BAKERSFIELD**

THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
SHAFTER VIADUCT
PLAN AND ELEVATION

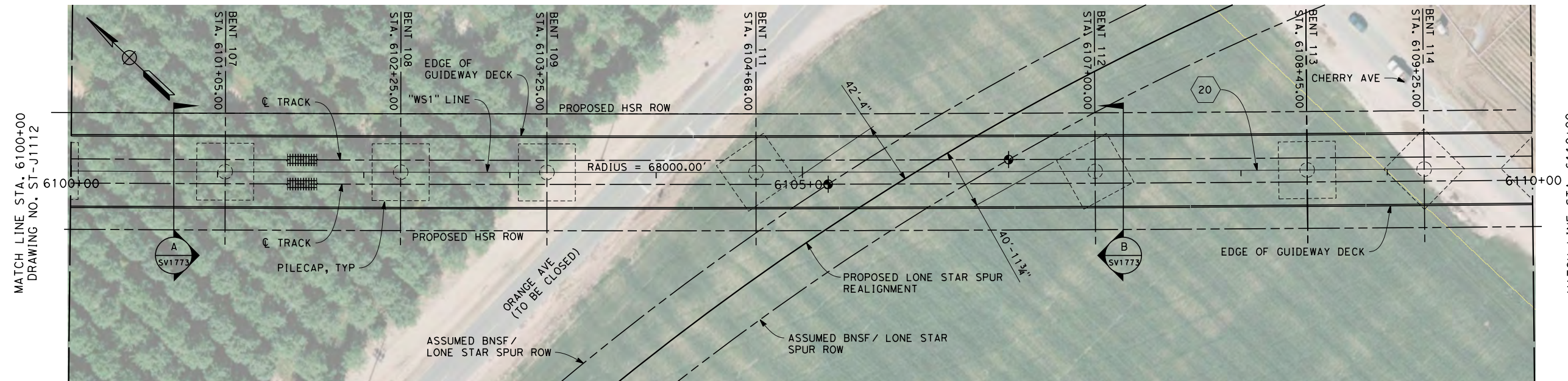
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HSR 06-0003
DRAWING NO.
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SCALE
AS SHOWN
SHEET NO.
7 OF 15

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10/7/2014 12:51:49 PM CAHSR-r1.tbl PDF_half_black_200dpi.plt paul.tonkin



ELEVATION
SCALE 1" = 40'



PLAN
SCALE 1" = 40'

NOTES

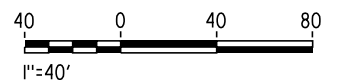
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2. PILE LENGTH TO BE DETERMINED
3. SUPERSTRUCTURE CONSTRUCTION, UON
SIMPLE SPANS - MSS OR FLPM
CONTINUOUS SPANS - BCC - PRECAST IN-SITU
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- ① STRUCTURE APPROACH SLAB
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- * ESTIMATED 100-YEAR FLOOD ELEVATION, SEE "FRESNO TO BAKERSFIELD CORRIDOR HYDROLOGY, HYDRAULICS AND DRAINAGE 15% DRAFT REPORT".
- ⬢ CRITICAL CLEARANCE AT EDGE OF SOFFIT

CURVE DATA

R = 68000.00'
Δ = 03° 44' 50.0"
T = 2224.4'
L = 4447.3'



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

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PRELIMINARY
DESIGN**

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**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

THROUGH WASCO-SHAFTER SUBSECTION
ALIGNMENT WS1
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PLAN AND ELEVATION

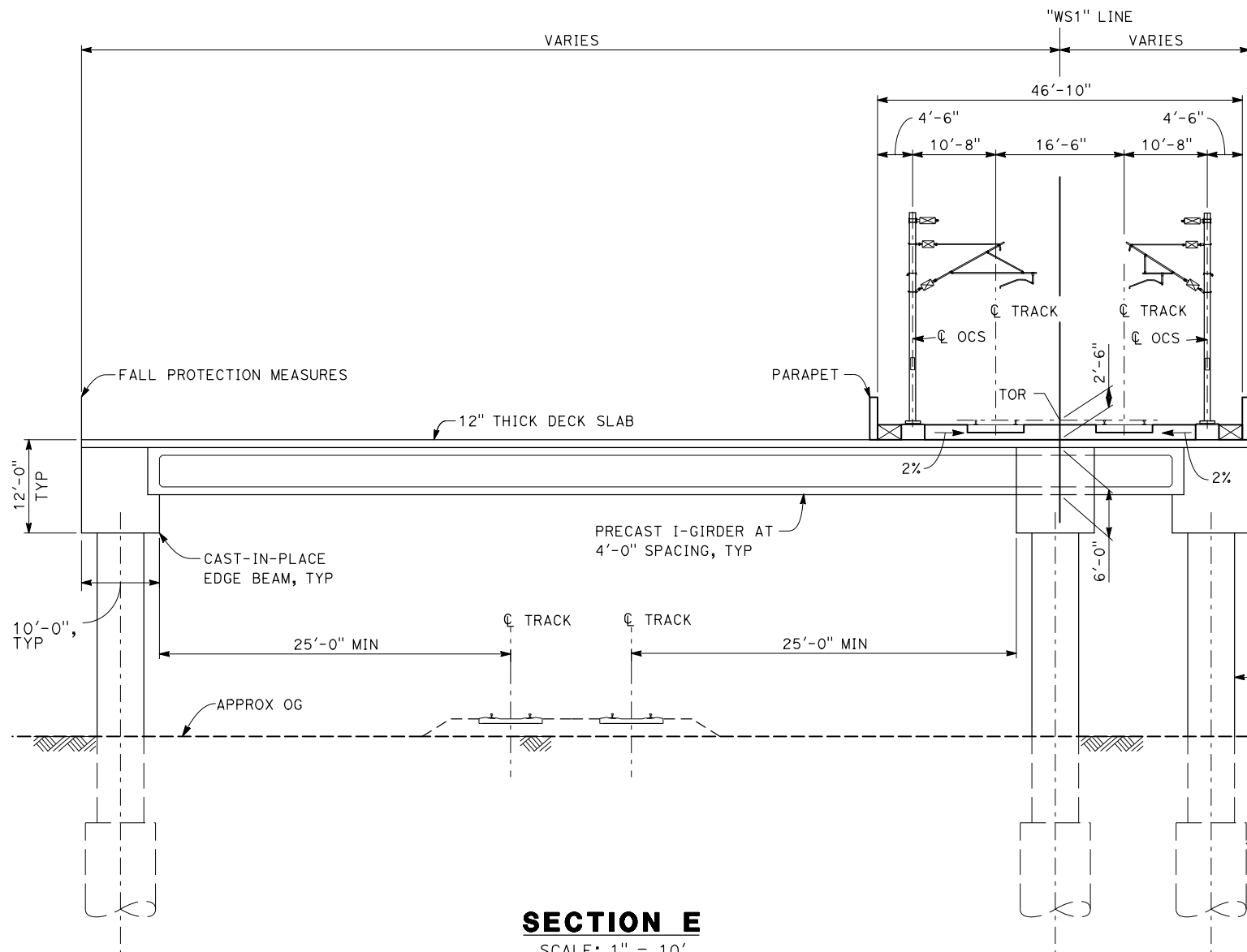
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SHEET NO. 8 OF 15

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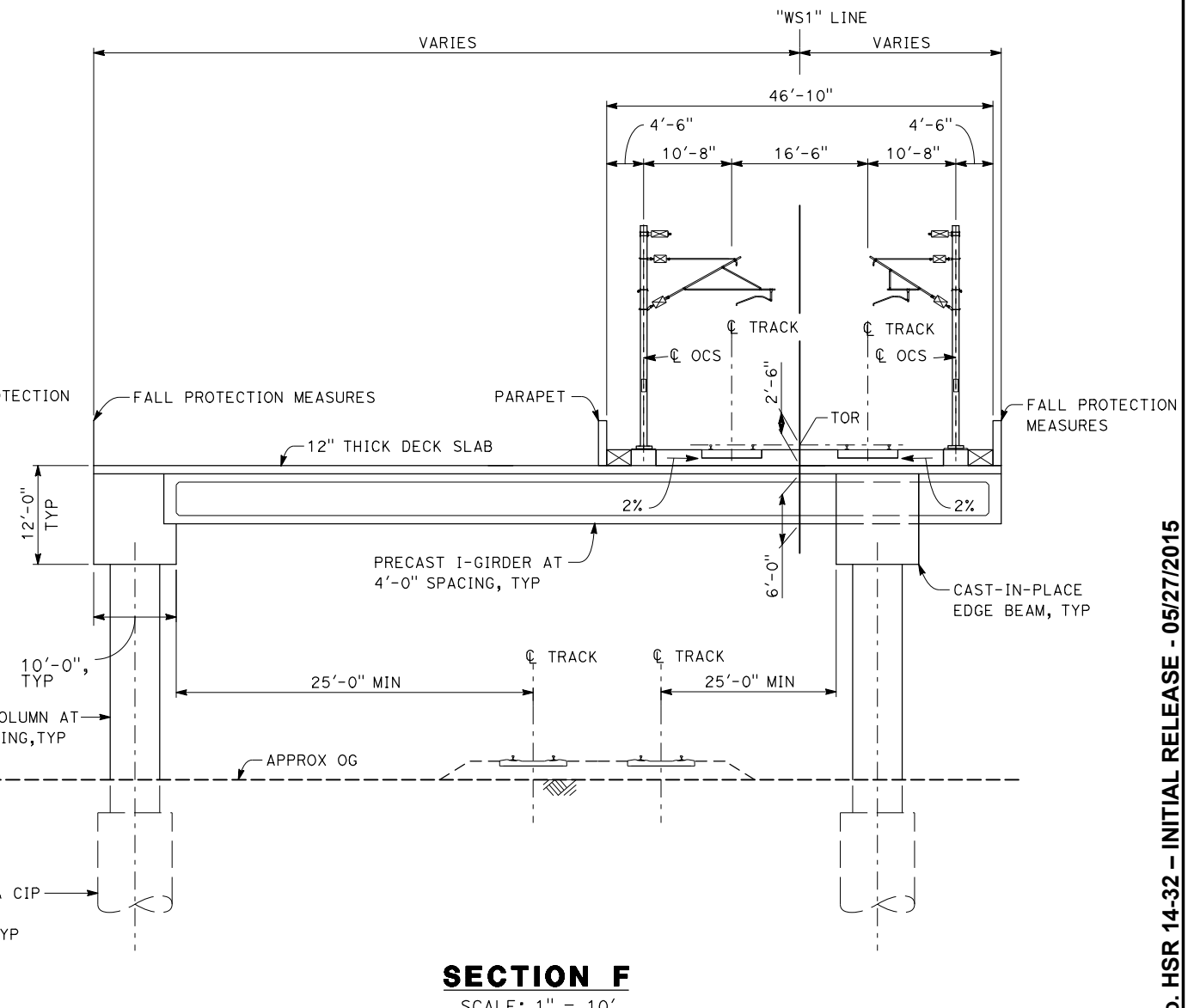
paul.tonkin



SECTION E

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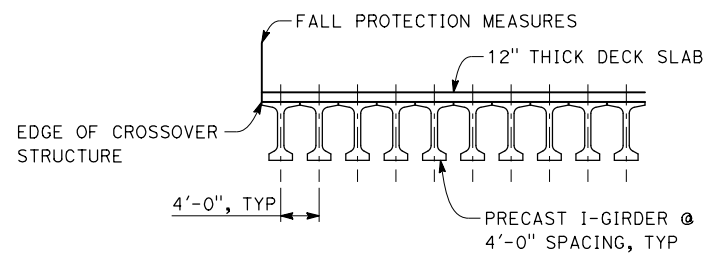
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STA 6056+10 THROUGH 6059+05



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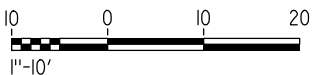
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STA 6041+10 THROUGH 6042+90
STA 6054+60 THROUGH 6056+10



SECTION G

SCALE: 1" = 10'



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY Y. REN
DRAWN BY F. PALERMO
CHECKED BY Q. LIU
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**

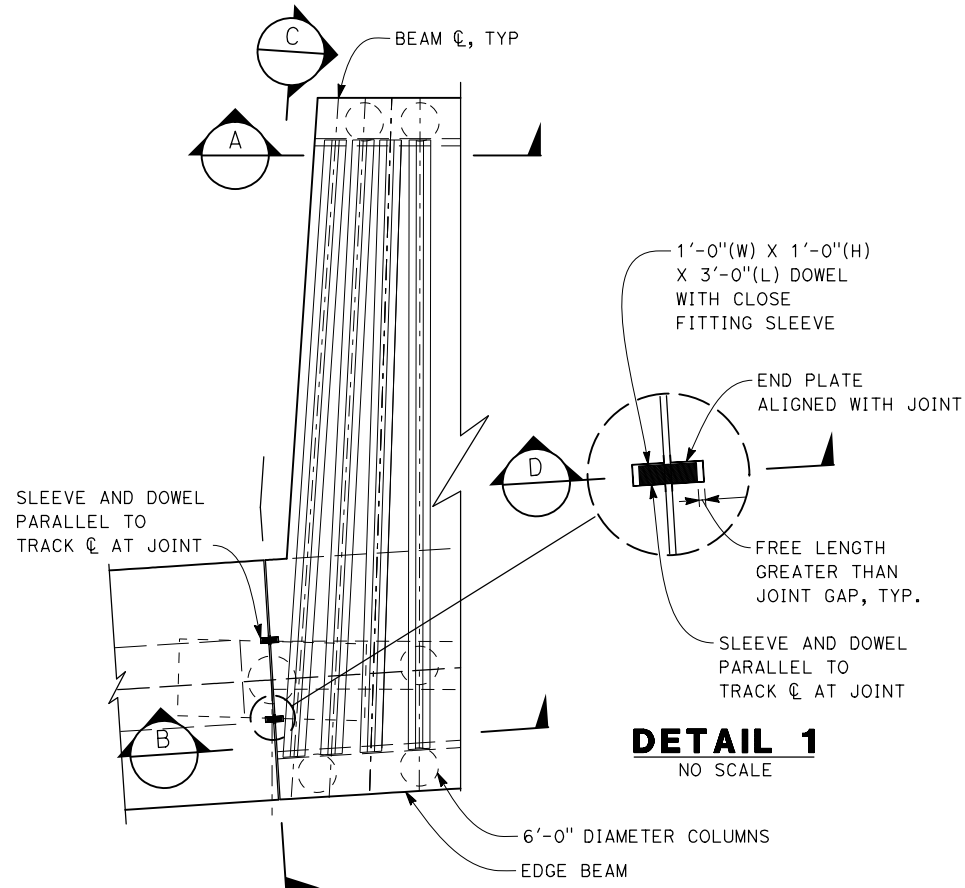


**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

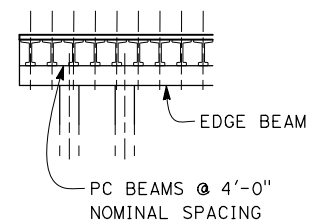
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ALIGNMENT WS1
SHAFTER VIADUCT
TYPICAL SECTIONS

CONTRACT NO. HSR 06-0003
DRAWING NO. ST-J1114
SCALE AS SHOWN
SHEET NO. 9 OF 15

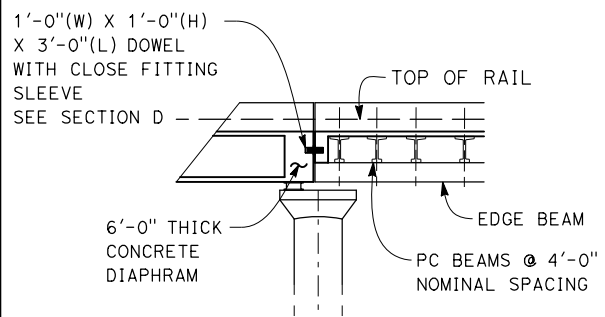
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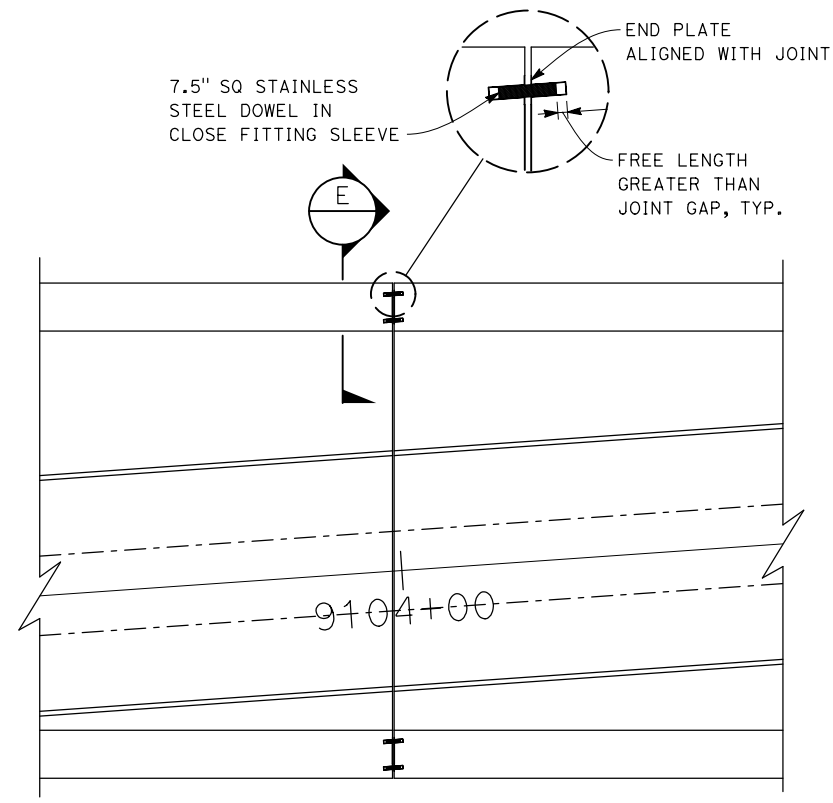
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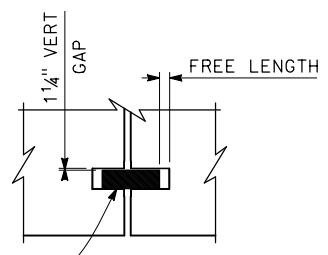
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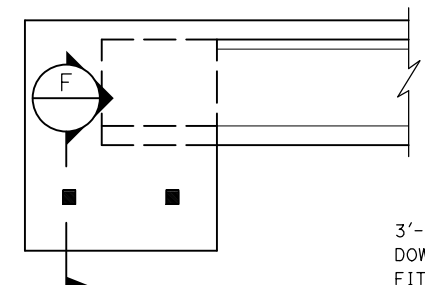
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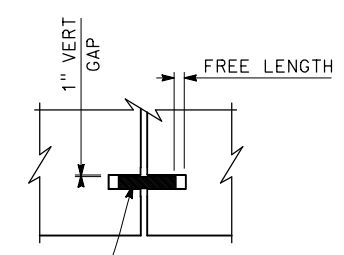
PLAN
SCALE: 1" = 20'



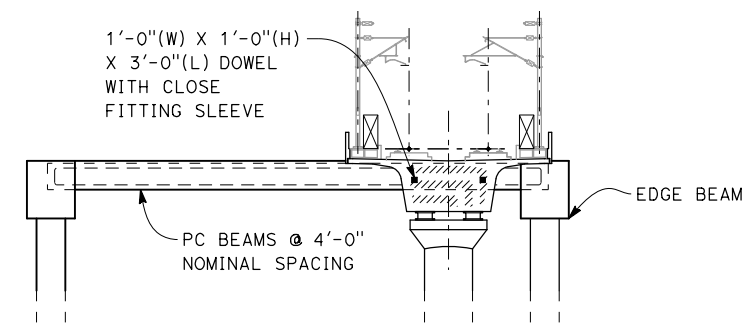
SECTION D
SCALE: 1" = 5'



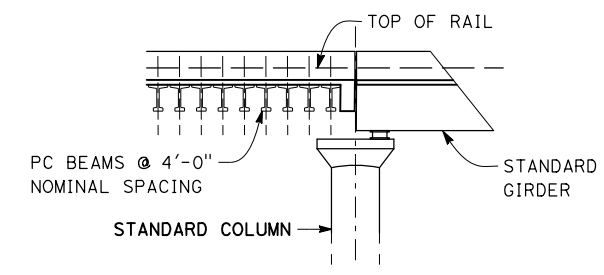
SECTION E
SCALE: 1" = 5'



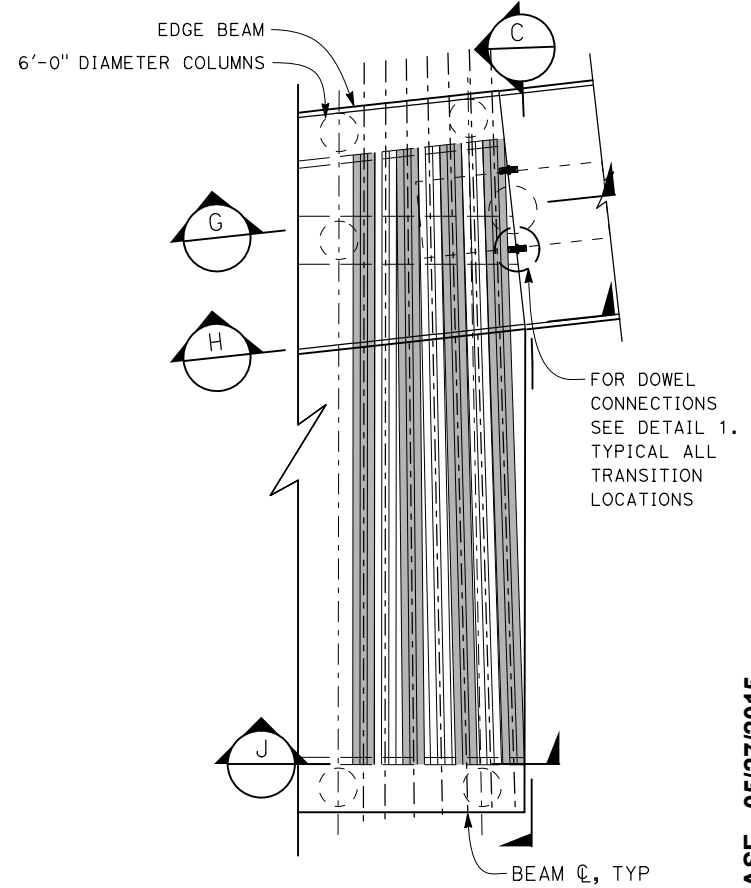
SECTION F
SCALE: 1" = 5'



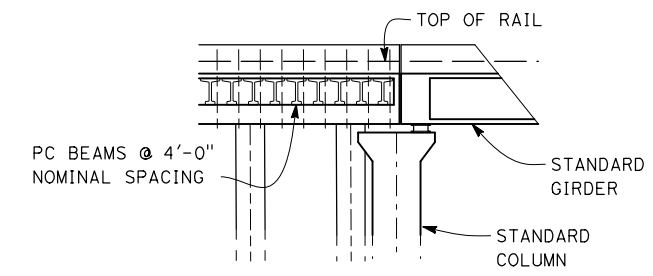
SECTION C
SCALE: 1" = 20'



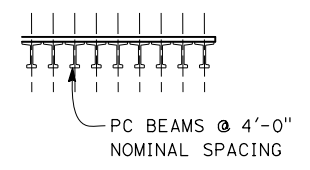
SECTION H
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



SECTION G
SCALE: 1" = 20'



SECTION J
SCALE: 1" = 20'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
M. FISHER
DRAWN BY
F. PALERMO
CHECKED BY
A. ARMSTRONG
IN CHARGE
R. COFFIN
DATE
10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**

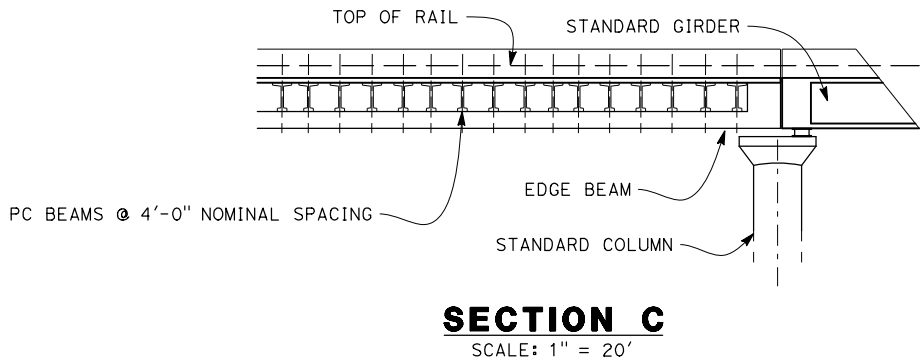
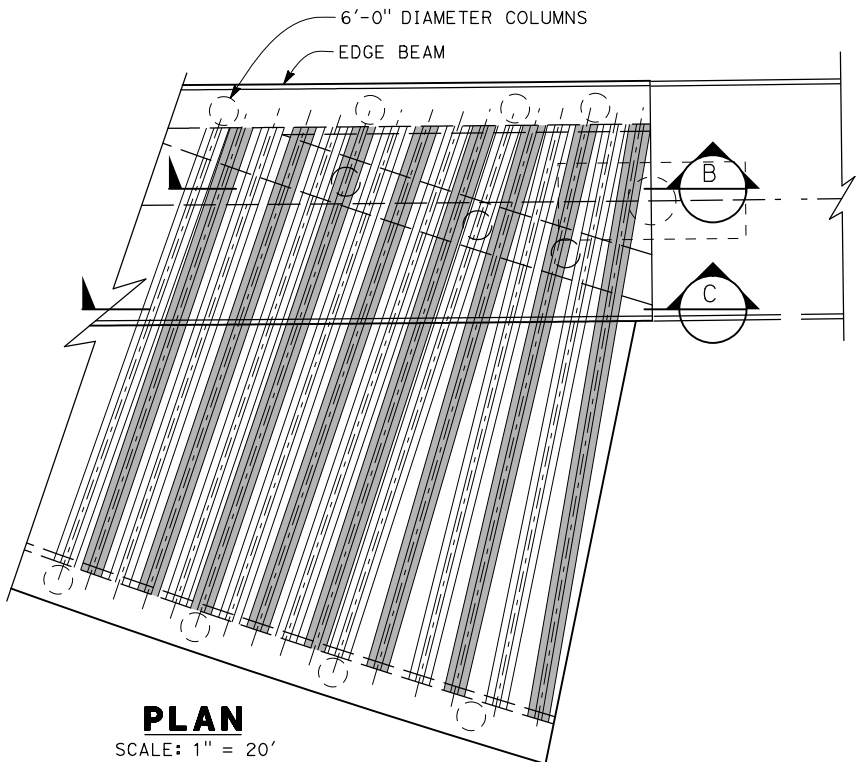
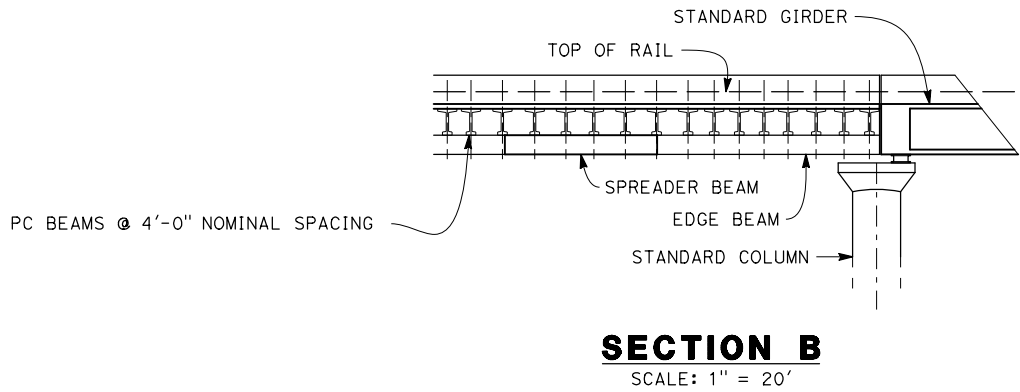
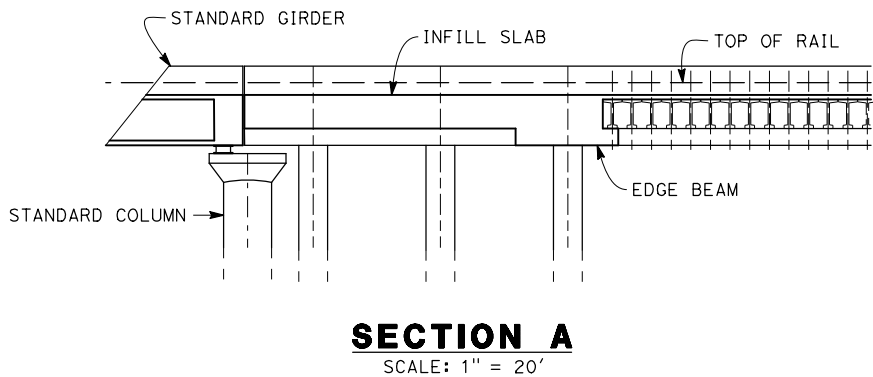
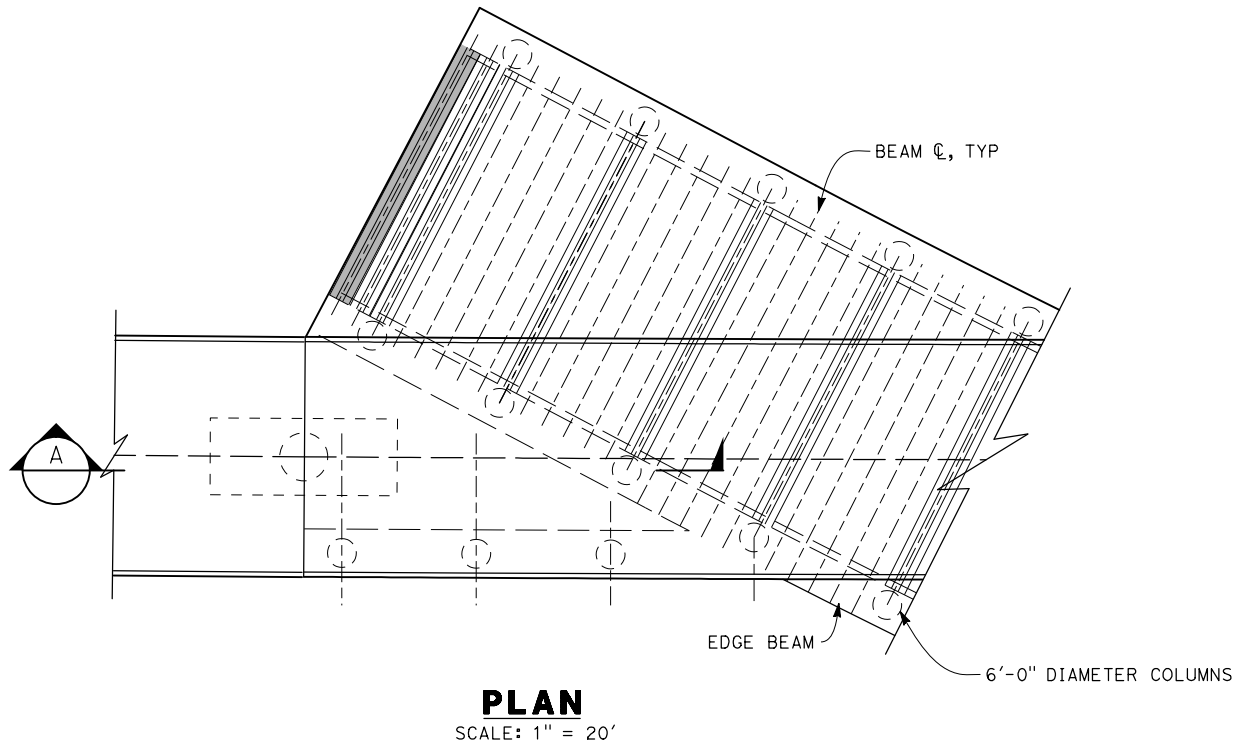


**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**
PACKAGE 4
ELEVATED SLAB STRUCTURE
TYPICAL SECTIONS AND LAYOUT
GENERAL ARRANGEMENT

CONTRACT NO.
HSR 06-0003
DRAWING NO.
ST-J5110
SCALE
AS SHOWN
SHEET NO.
10 OF 15

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10/14/2014 1:12:28 PM CAHSR-r1.tbl pdf_half_black.plt paul.tonkin

NOTE:
1. REFER TO DRAWING ST-J5110 FOR DOWEL LAYOUT AND DETAILS



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

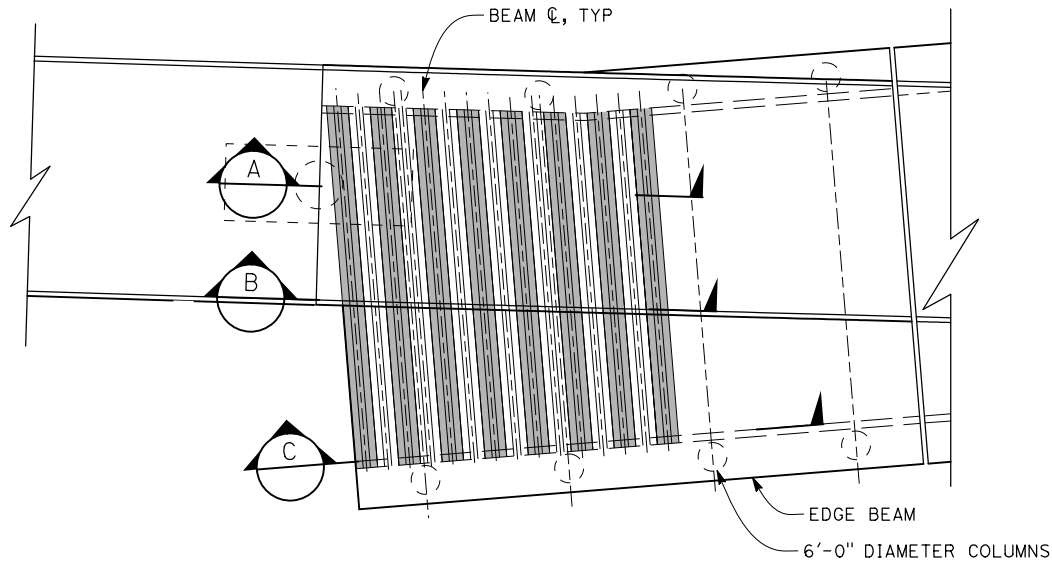
PACKAGE 4
ELEVATED SLAB STRUCTURE
TYPICAL SECTIONS AND LAYOUT
GENERAL ARRANGEMENT

CONTRACT NO. HSR 06-0003
DRAWING NO. ST-J5111
SCALE AS SHOWN
SHEET NO. 11 OF 15

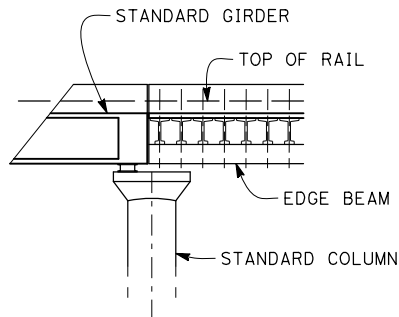
RFP No. HSR 14-32 – INITIAL RELEASE - 05/27/2015

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10/15/2014 7:00:42 PM
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paul.tonkin

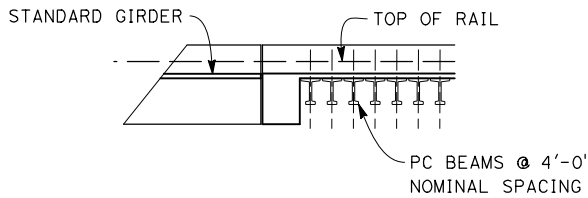
NOTE:
1. REFER TO DRAWING ST-J5110 FOR DOWEL LAYOUT AND DETAILS



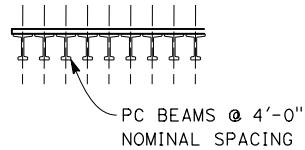
PLAN
SCALE: 1" = 20'



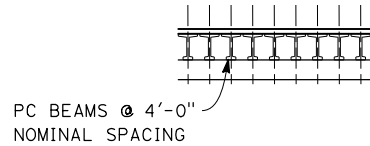
SECTION A
SCALE: 1" = 20'



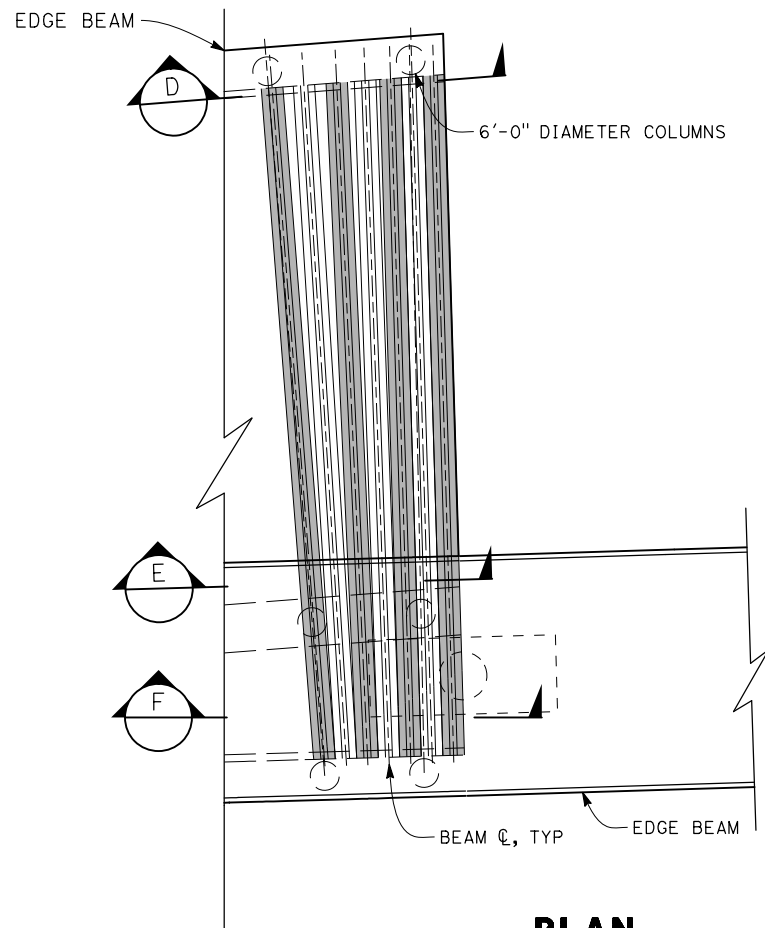
SECTION B
SCALE: 1" = 20'



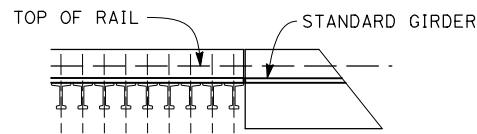
SECTION C
SCALE: 1" = 20'



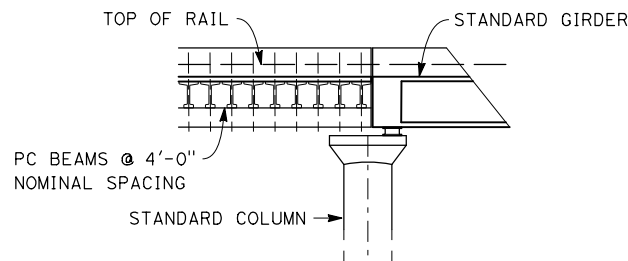
SECTION D
SCALE: 1" = 20'



PLAN
SCALE: 1" = 20'



SECTION E
SCALE: 1" = 20'



SECTION F
SCALE: 1" = 20'

REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**

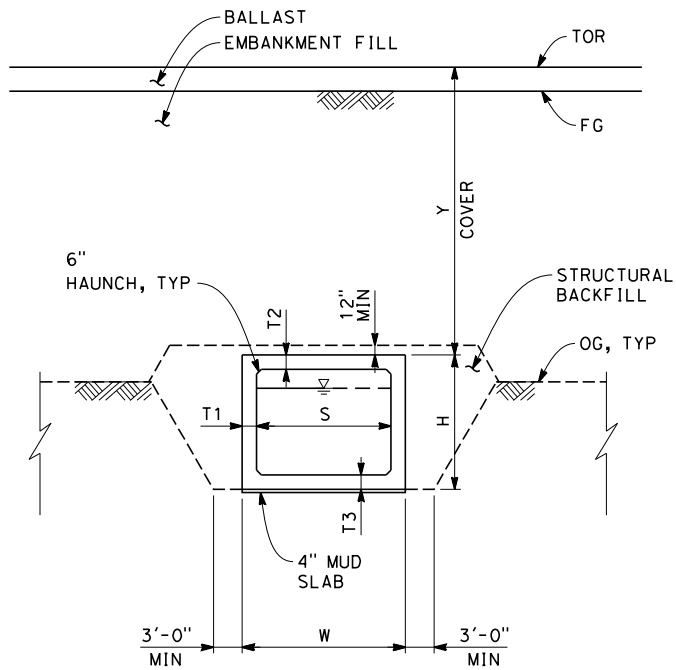


**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

PACKAGE 4
ELEVATED SLAB STRUCTURE
TYPICAL SECTIONS AND LAYOUT
GENERAL ARRANGEMENT

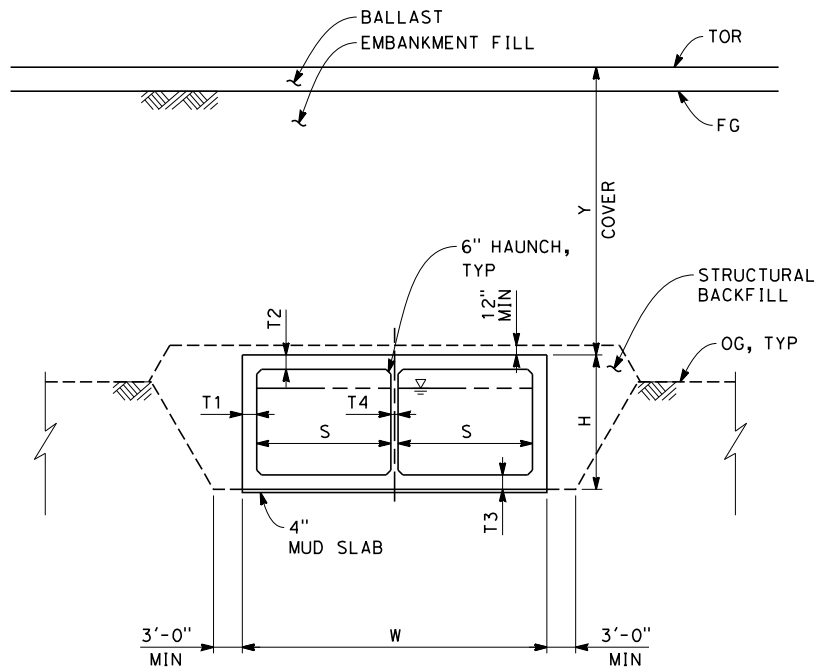
CONTRACT NO. HSR 06-0003
DRAWING NO. ST-J5112
SCALE AS SHOWN
SHEET NO. 12 OF 15

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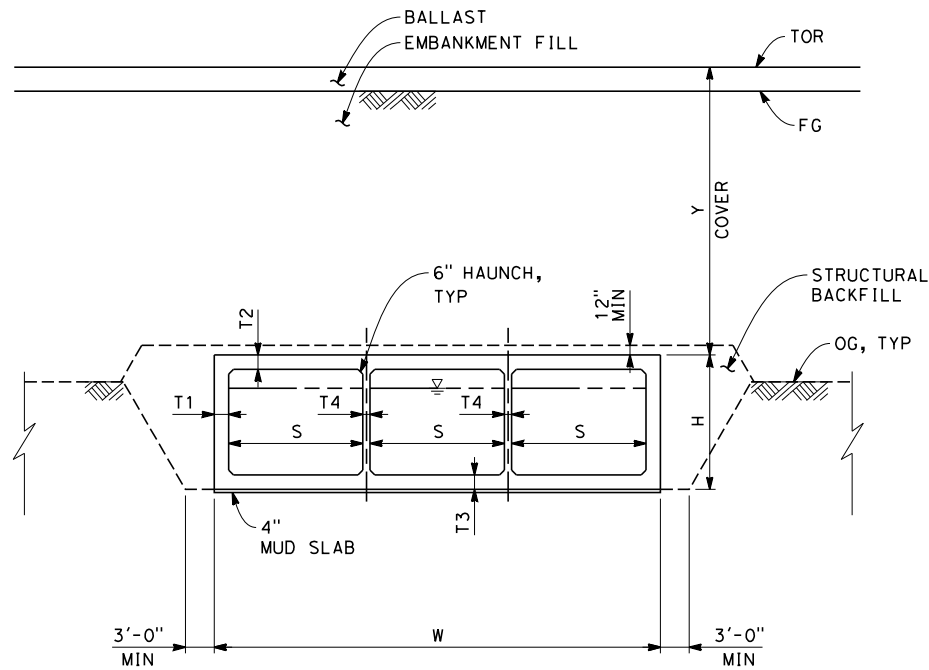
SINGLE CELL BOX CULVERT

SCALE: 1" = 10'



2-CELL BOX CULVERT

SCALE: 1" = 10'



3-CELL BOX CULVERT

SCALE: 1" = 10'

SINGLE-CELL BOX CULVERT

COVER	SPAN	HEIGHT	WIDTH	T1	T2	T3
6'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
6'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
6'- 0"	15'- 0"	5'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
6'- 0"	15'- 0"	10'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
10'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
10'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
10'- 0"	15'- 0"	5'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
10'- 0"	15'- 0"	10'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
10'- 0"	15'- 0"	10'- 0"	17'- 2"	1'- 1"	1'- 1"	1'- 1"
15'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
15'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
15'- 0"	15'- 0"	5'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
15'- 0"	15'- 0"	10'- 0"	17'- 0"	1'- 0"	1'- 0"	1'- 0"
20'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
20'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
20'- 0"	15'- 0"	5'- 0"	17'- 2"	1'- 1"	1'- 1"	1'- 1"
20'- 0"	15'- 0"	10'- 0"	17'- 2"	1'- 1"	1'- 1"	1'- 1"
25'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
25'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
25'- 0"	15'- 0"	5'- 0"	17'- 6"	1'- 3"	1'- 3"	1'- 3"
25'- 0"	15'- 0"	10'- 0"	17'- 6"	1'- 3"	1'- 3"	1'- 3"
30'- 0"	10'- 0"	5'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
30'- 0"	10'- 0"	10'- 0"	12'- 0"	1'- 0"	1'- 0"	1'- 0"
30'- 0"	15'- 0"	5'- 0"	17'- 8"	1'- 4"	1'- 4"	1'- 4"
30'- 0"	15'- 0"	10'- 0"	17'- 8"	1'- 4"	1'- 4"	1'- 4"

2-CELL BOX CULVERT

COVER	SPAN	HEIGHT	WIDTH	T1	T2	T3	T4
6'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	15'- 0"	5'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	15'- 0"	10'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	15'- 0"	5'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	15'- 0"	10'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	15'- 0"	5'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	15'- 0"	10'- 0"	32'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	15'- 0"	5'- 0"	33'- 0"	1'- 1"	1'- 1"	1'- 1"	0'-10"
20'- 0"	15'- 0"	10'- 0"	33'- 0"	1'- 1"	1'- 1"	1'- 1"	0'-10"
25'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
25'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
25'- 0"	15'- 0"	5'- 0"	33'- 6"	1'- 3"	1'- 3"	1'- 3"	1'- 0"
25'- 0"	15'- 0"	10'- 0"	33'- 6"	1'- 3"	1'- 3"	1'- 3"	1'- 0"
30'- 0"	10'- 0"	5'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
30'- 0"	10'- 0"	10'- 0"	22'-10"	1'- 0"	1'- 0"	1'- 0"	0'-10"
30'- 0"	15'- 0"	5'- 0"	33'- 9"	1'- 4"	1'- 4"	1'- 4"	1'- 1"
30'- 0"	15'- 0"	10'- 0"	33'- 9"	1'- 4"	1'- 4"	1'- 4"	1'- 1"

3-CELL BOX CULVERT

COVER	SPAN	HEIGHT	WIDTH	T1	T2	T3	T4
6'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	15'- 0"	5'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
6'- 0"	15'- 0"	10'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	15'- 0"	5'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
10'- 0"	15'- 0"	10'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	15'- 0"	5'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
15'- 0"	15'- 0"	10'- 0"	48'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
20'- 0"	15'- 0"	5'- 0"	48'-11"	1'- 1"	1'- 1"	1'- 1"	0'-10"
20'- 0"	15'- 0"	10'- 0"	48'-11"	1'- 1"	1'- 1"	1'- 1"	0'-10"
25'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
25'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
25'- 0"	15'- 0"	5'- 0"	49'- 6"	1'- 3"	1'- 3"	1'- 3"	1'- 0"
25'- 0"	15'- 0"	10'- 0"	49'- 6"	1'- 3"	1'- 3"	1'- 3"	1'- 0"
30'- 0"	10'- 0"	5'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
30'- 0"	10'- 0"	10'- 0"	33'- 7"	1'- 0"	1'- 0"	1'- 0"	0'-10"
30'- 0"	15'- 0"	5'- 0"	49'-10"	1'- 4"	1'- 4"	1'- 4"	1'- 1"
30'- 0"	15'- 0"	10'- 0"	49'-10"	1'- 4"	1'- 4"	1'- 4"	1'- 1"

NOTES:

- ALL DIMENSIONS ARE IN U.S. CUSTOMARY UNITS.
- WATER LEVEL SHOWN IS ASSUMED DESIGN FLOW LEVEL.
- DESIGN ASSUMES THAT AREAS OF SOFT GROUND BELOW FOUNDATION ARE TREATED BEFORE CONSTRUCTION.
- MINIMUM CLEARANCE FROM DESIGN FLOW LEVEL TO SOFFIT SHALL BE 2'-0".
- MINIMUM DIMENSION "Y" FROM TOP OF RAIL TO TOP OF STRUCTURE SHALL BE 6'-0".



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY M. FISHER
DRAWN BY F. PALERMO
CHECKED BY A. ARMSTRONG
IN CHARGE R. COFFIN
DATE 10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**

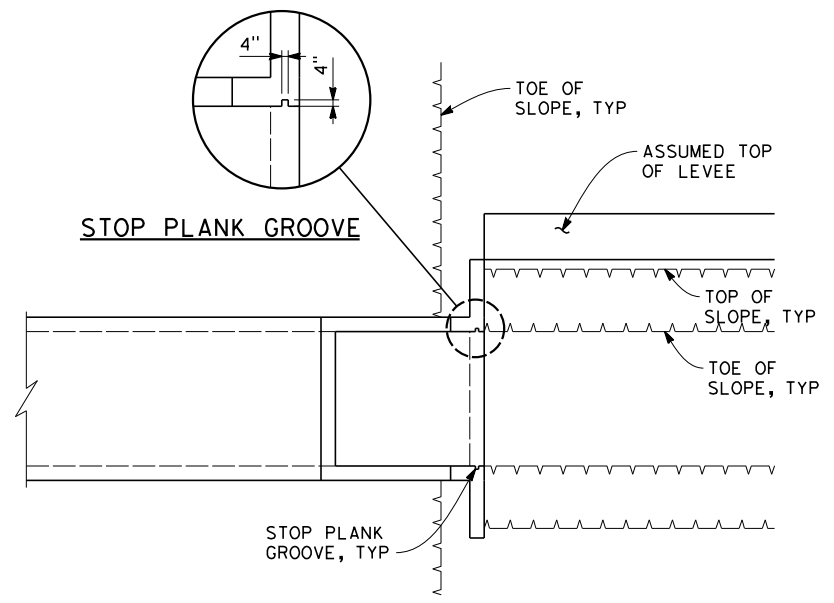


**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**

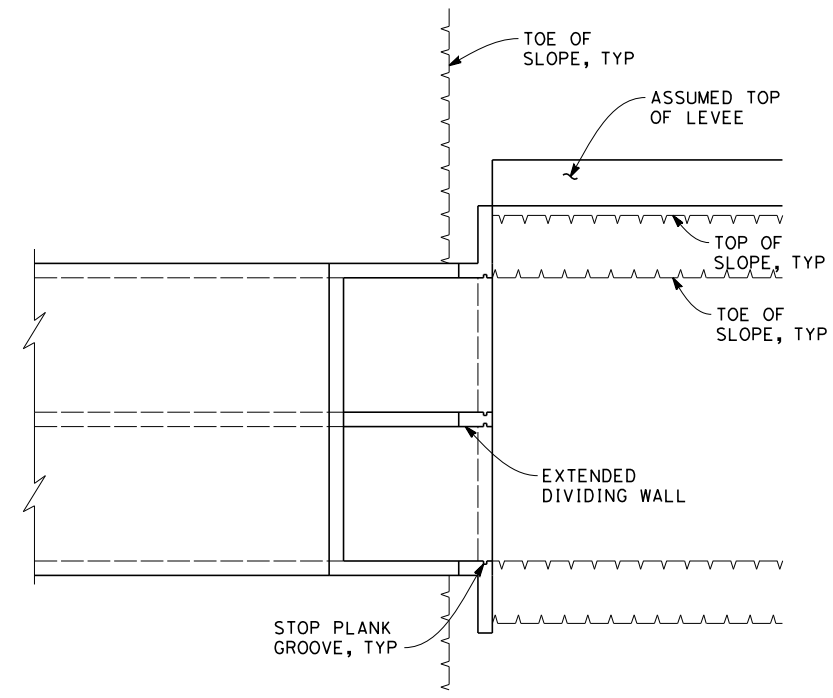
BOX CULVERT
TYPICAL DETAILS
SHEET 1

CONTRACT NO. HSR 06-0003
DRAWING NO. ST-J5113
SCALE AS SHOWN
SHEET NO. 13 OF 15

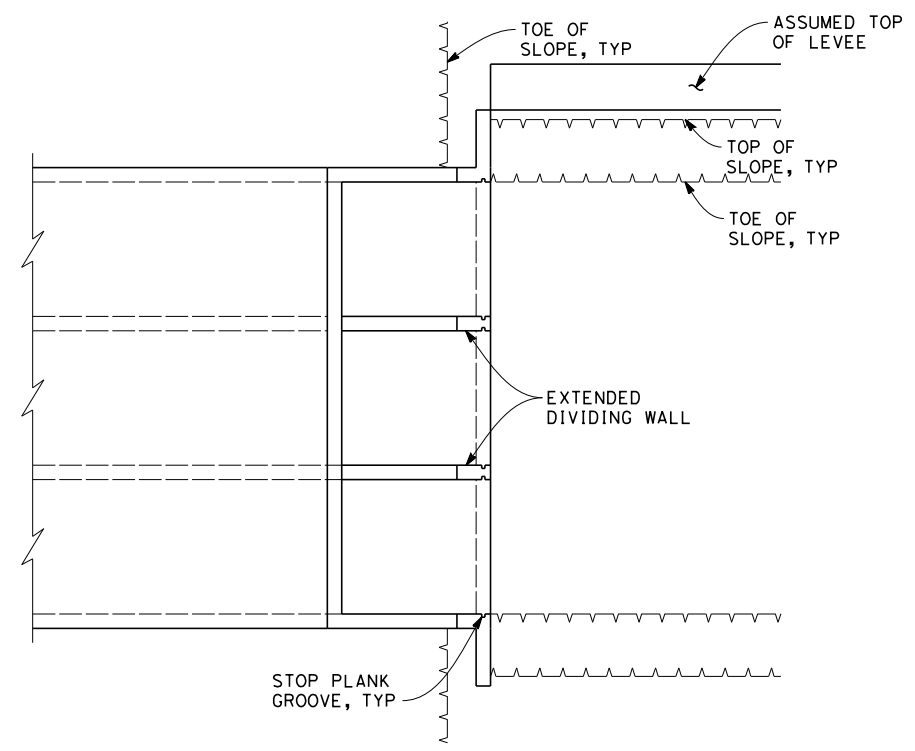
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paul.tonkin



SINGLE CELL CULVERT

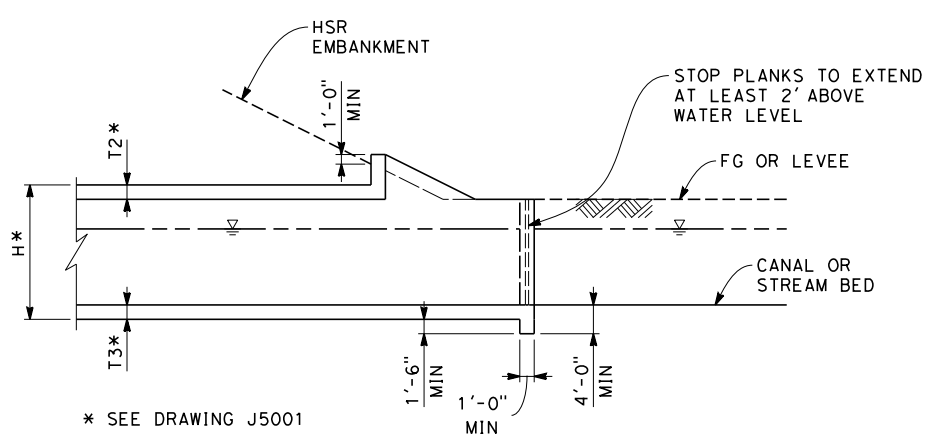


2-CELL CULVERT

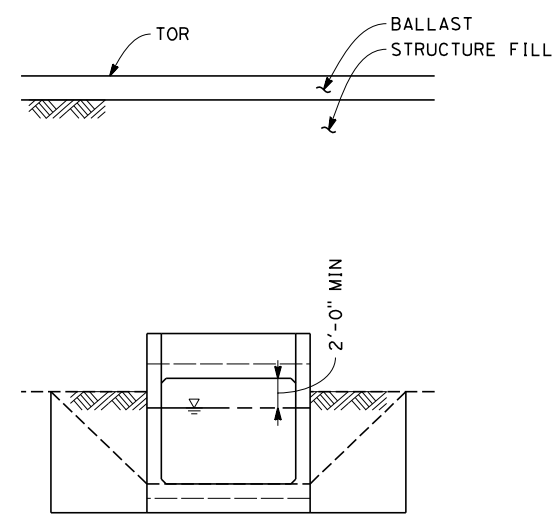


3-CELL CULVERT

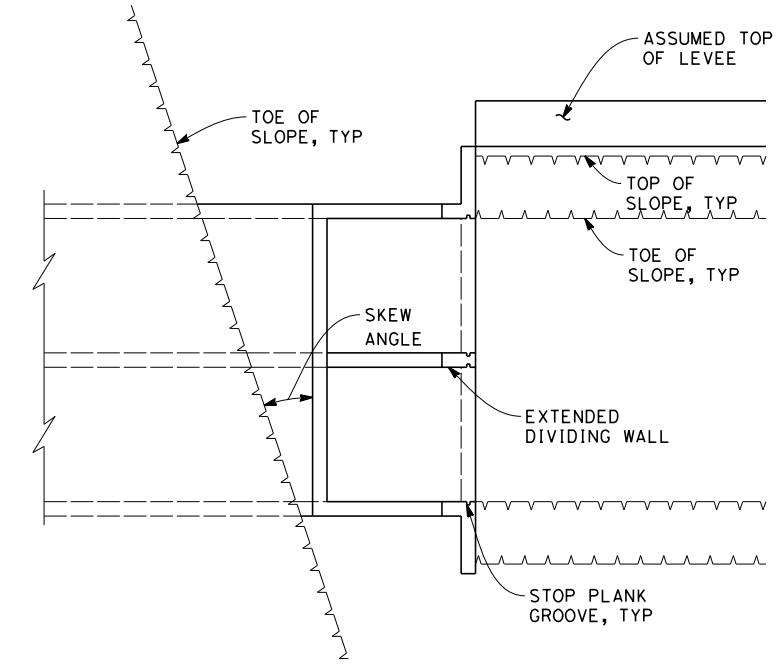
PLAN
SCALE: 1" = 10'



ELEVATION
SCALE: 1" = 10'

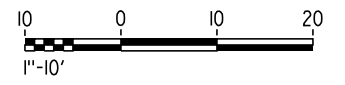


TYPICAL SECTION
SCALE: 1" = 10'



TREATMENT OF SKEWED CROSSING
SCALE: 1" = 10'

- NOTES:
- 1. ALL DIMENSIONS ARE IN U.S. CUSTOMARY UNITS.
 - 2. HEADWALLS INTENDED TO BE SUITABLE FOR UPSTREAM AND DOWNSTREAM ENDS OF STRUCTURE.
 - 3. WATER LEVEL SHOWN IS ASSUMED DESIGN FLOW LEVEL.
 - 4. STOP PLANK LOCATION MAYBE ADJUSTED TO FACE OF HEADWALL IF UPSTREAM DIVIDING WALL REQUIRED TO SLOPE ONTO BED LEVEL.



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
M. FISHER
DRAWN BY
F. PALERMO
CHECKED BY
A. ARMSTRONG
IN CHARGE
R. COFFIN
DATE
10/17/14

PROPOSED
PRELIMINARY
DESIGN

NOT FOR
CONSTRUCTION

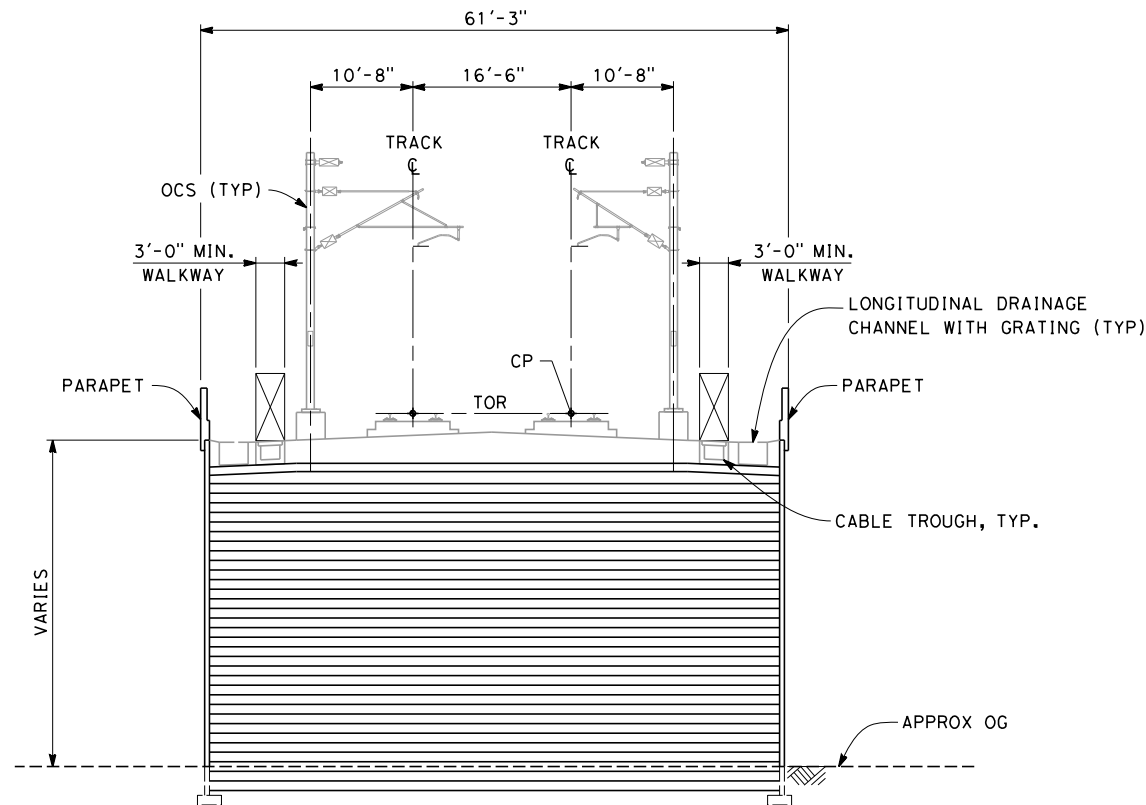


CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD
BOX CULVERT
TYPICAL DETAILS
SHEET 2

CONTRACT NO.
HSR 06-0003
DRAWING NO.
ST-J5114
SCALE
AS SHOWN
SHEET NO.
14 OF 15

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NOTES:
GROUND IMPROVEMENT OR PILED RAFT FOUNDATION MAY BE NECESSARY IN SOME LOCATIONS TO PROVIDE SUITABLE SUPPORT FOR THE RETAINED EMBANKMENT, REFER TO THE GROUND INVESTIGATION DATA REPORT.



TYPICAL SECTION
SCALE: 1" = 10'

STRUCTURE FORM	LENGTH	BEGIN STA	END STA	CONSTRUCTION	RETAINED HEIGHT AT BEGINNING	RETAINED HEIGHT AT END
RETAINING WALL	3390	5191+50.0	5225+40.0	MSE WALL (RETAINED EMBANKMENT)	15' APPROX	30' APPROX
RETAINING WALL	4380	5227+80.0	5271+60.0	MSE WALL (RETAINED EMBANKMENT)	30' APPROX	15' APPROX
RETAINING WALL	540	5551+00.0	5556+40.0	MSE WALL (RETAINED EMBANKMENT)	15' APPROX	30' APPROX
RETAINING WALL	720	5557+60.0	5564+80.0	MSE WALL (RETAINED EMBANKMENT)	30' APPROX	30' APPROX
RETAINING WALL	2655	5682+95.0	5709+50.0	MSE WALL (RETAINED EMBANKMENT)	30' APPROX	15' APPROX
RETAINING WALL	2675	5928+55.0	5955+30.0	MSE WALL (RETAINED EMBANKMENT)	15' APPROX	30' APPROX
RETAINING WALL	3375	6117+25.0	6151+00.0	MSE WALL (RETAINED EMBANKMENT)	30' APPROX	15' APPROX



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
M. FISHER
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F. PALERMO
CHECKED BY
A. ARMSTRONG
IN CHARGE
R. COFFIN
DATE
10/17/14

**PROPOSED
PRELIMINARY
DESIGN**

**NOT FOR
CONSTRUCTION**



**CALIFORNIA HIGH-SPEED TRAIN PROJECT
FRESNO TO BAKERSFIELD**
RETAINED EMBANKMENT
TYPICAL RETAINING WALL

CONTRACT NO.
HSR 06-0003
DRAWING NO.
ST-J5115
SCALE
AS SHOWN
SHEET NO.
15 OF 15